GenCore version 5.1.6

OM nucleic - nucleic search, using sw model

Run on: March 3, 2004, 09:32:18 ; Search time 639 Seconds
(without alignments)
10191.686 Million cell updates/sec

Title: US-10-074-547-3
Perfect score: 1533
Sequence: 1 atgtataccagtcatgaaga.....tggatggtgcacatgtttag 1533

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 3373863 seqs, 2124099041 residues

Total number of hits satisfying chosen parameters: 6747726

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : N_Geneseq_29Jan04:*
1: geneseqn1980s:*
2: geneseqn1990s:*
3: geneseqn2000s:*
4: geneseqn2001as:*
5: geneseqn2001bs:*
6: geneseqn2002s:*
7: geneseqn2003as:*
8: geneseqn2003bs:*
9: geneseqn2003cs:*
10: geneseqn2004s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	Result No.	Score	% Query Match	Length	DB	ID	Description
	1	1533	100.0	4037	5	ABV26931	Abv26931 Human pro
	2	1533	100.0	4037	5	ABV21089	Abv21089 Human pro
	3	1533	100.0	4419	6	ABS53449	Abs53449 cDNA enco
	4	1529.8	99.8	3639	7	ABX71097	Abx71097 Novel hum
	5	1521	99.2	2139	6	ABQ72638	Abq72638 Human MDD
	6	1384.4	90.3	1867	6	AAD36317	Aad36317 Human tra
	7	1062.4	69.3	3645	7	ADA52789	Ada52789 Human cod
	8	671.8	43.8	1294	6	ABX97074	Abx97074 Human NOV
	9	537.4	35.1	614	5	ABV32054	Abv32054 Human pro
	10	537.4	35.1	614	5	ABV40993	Abv40993 Human pro
	11	442	28.8	2838	7	ADA52768	Ada52768 Human cod
	12	300.4	19.6	314	5	ABV10902	Abv10902 Human pro
	13	299.4	19.5	313	5	ABV01733	Abv01733 Human pro
c	14	284.4	18.6	501	4	AAI87063	Aai87063 Human pol
	15	263.2	17.2	2681	7	ABZ35957	Abz35957 Human sec
c	16	235	15.3	431	4	AAI89464	Aai89464 Human pol
	17	182.4	11.9	1568	6	ABN85745	Abn85745 Human tra
	18	182.4	11.9	2628	7	ABX70801	Abx70801 Novel hum
	19	182.4	11.9	3440	6	ABK83222	Abk83222 Human tra
	20	180.8	11.8	3815	7	ABX56295	Abx56295 Human NOV
	21	160.4	10.5	3321	6	ABZ22365	Abz22365 Retinal e
	22	158.4	10.3	387	6	ABN76577	Abn76577 Human ORF
	23	147	9.6	2322	4	ABL06203	Abl06203 Drosophil
	24	139	9.1	2531	7	ABZ25095	Abz25095 Arginase
	25	130.6	8.5	3238	4	ABL06109	Abl06109 Drosophil
c	26	130.6	8.5	6274	4	ABL06108	Abl06108 Drosophil
	27	129.6	8.5	1982	4	AAS56593	Aas56593 Human cDN
	28	129.6	8.5	1982	6	ABT11027	Abt11027 Human bre
	29	129.6	8.5	1982	7	ACC72760	Acc72760 Human can
	30	129.6	8.5	1982	7	ACC72765	Acc72765 Human can
	31	129.6	8.5	1982	7	ACC49538	Acc49538 Tumour-as
	32	129.6	8.5	2026	2	AAZ11734	Aaz11734 Human tra
	33	127.4	8.3	602	2	AAV90044	Aav90044 EST clone
	34	127	8.3	1458	7	AAL55550	Aal55550 Monocarob
	35	127	8.3	1548	7	AAL55565	Aal55565 Monocarob
	36	127	8.3	1752	7	AAL55564	Aal55564 Monocarob
	37	127	8.3	2241	6	AAD36309	Aad36309 Human tra
	38	127	8.3	2559	6	AAD35980	Aad35980 Human tra
	39	115.2	7.5	1458	7	AAL55577	Aal55577 Monocarob
	40	115.2	7.5	1466	7	AAL55580	Aal55580 Monocarob
	41	114.8	7.5	1344	6	ABL57731	Abl57731 Human sbg
	42	114.8	7.5	1803	4	AAK94689	Aak94689 Human ful
	43	114.6	7.5	1278	6	ABS53751	Abs53751 Human mon
	44	114.6	7.5	1281	6	ABQ86184	Abq86184 Novel hum
	45	114.6	7.5	1375	6	ABL57732	Abl57732 Human sbg

ALIGNMENTS

RESULT 1
ABV26931
ID ABV26931 standard; cDNA; 4037 BP.
XX
AC ABV26931;
XX
DT 16-SEP-2002 (first entry)
XX
DE Human prostate expression marker cDNA 26922.
XX
KW Human; prostate cancer; cytostatic; carcinogen; pharmacodyanamic marker;
KW pharmacogenomic marker; gene; ss.
XX
OS Homo sapiens.
XX
PN WO200160860-A2.
XX
PD 23-AUG-2001.
XX
PF 20-FEB-2001; 2001WO-US005171.
XX
PR 17-FEB-2000; 2000US-0183319P.
PR 16-MAR-2000; 2000US-0189862P.
PR 25-MAY-2000; 2000US-0207454P.
PR 09-JUN-2000; 2000US-0211314P.
PR 18-JUL-2000; 2000US-0219007P.
PR 13-DEC-2000; 2000US-0255281P.
XX
PA (MILL-) MILLENNIUM PREDICTIVE MEDICINE INC.
XX
PI Schlegel R, Endege WO, Monahan JE;
XX
DR WPI; 2001-662795/76.
XX
PT Novel isolated nucleic acid molecule associated with cancerous state of
PT prostate cells and correlating with presence of prostate cancer, useful
PT for detecting presence of prostate cancer, stage of prostate cancer.
XX
PS Claim 1; Page 5452-5453; 11750pp; English.
XX
CC The invention relates to an isolated nucleic acid molecule (I) comprising
CC a nucleotide sequence given in Tables 1-9 (ABV00010-ABV62213) of the
CC specification or its complement. (I) is useful for: (a) assessing whether
CC a patient is afflicted with prostate cancer; (b) monitoring the
CC progression of prostate cancer in a patient; (c) assessing the efficacy
CC of a test compound to inhibit prostate cancer in a patient; (d) assessing

CC the efficacy of a therapy for inhibiting prostate cancer in a patient;
CC (e) selecting a composition for inhibiting prostate cancer in a patient;
CC (f) assessing the prostate cell carcinogenic potential of a compound; (g)
CC determining whether prostate cancer has metastasized in a patient; (h)
CC assessing the aggressiveness or indolence of prostate cancer in a patient
CC ; (I) is also useful as a pharmacodyanamic or pharmacogenomic marker
XX
SQ Sequence 4037 BP; 1091 A; 913 C; 912 G; 1109 T; 0 U; 12 Other;

Query Match 100.0%; Score 1533; DB 5; Length 4037;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1533; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        442 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 501

Qy         61 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        502 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 561

Qy        121 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        562 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 621

Qy        181 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        622 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 681

Qy        241 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        682 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 741

Qy        301 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        742 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 801

Qy        361 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        802 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 861

Qy        421 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        862 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 921

Qy        481 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        922 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 981

Qy        541 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        982 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 1041

Qy        601 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1042 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1101

Qy        661 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1102 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1161

Qy        721 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1162 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1221

Qy        781 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1222 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1281

Qy        841 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1282 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1341

Qy        901 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1342 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1401

Qy        961 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1402 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1461

Qy       1021 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1462 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1521

Qy       1081 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1522 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1581

Qy       1141 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1582 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1641

Qy       1201 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1642 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1701

Qy       1261 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1702 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1761

Qy       1321 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1762 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1821

Qy       1381 GGGTGGATGTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1822 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1881

Qy       1441 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1500
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1882 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1941

Qy       1501 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1533
              |||||||||||||||||||||||||||||||||
Db       1942 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1974
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RESULT 2
ABV21089
ID ABV21089 standard; cDNA; 4037 BP.
XX
AC ABV21089;
XX
DT 13-SEP-2002 (first entry)
XX
DE Human prostate expression marker cDNA 21080.
XX
KW Human; prostate cancer; cytostatic; carcinogen; pharmacodyanamic marker;
KW pharmacogenomic marker; gene; ss.
XX
OS Homo sapiens.
XX
PN WO200160860-A2.
XX
PD 23-AUG-2001.
XX
PF 20-FEB-2001; 2001WO-US005171.
XX
PR 17-FEB-2000; 2000US-0183319P.
PR 16-MAR-2000; 2000US-0189862P.
PR 25-MAY-2000; 2000US-0207454P.
PR 09-JUN-2000; 2000US-0211314P.
PR 18-JUL-2000; 2000US-0219007P.
PR 13-DEC-2000; 2000US-0255281P.
XX

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Db        749 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 808

Qy        361 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 420

Db        809 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 868

Qy        421 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 480

Db        869 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 928

Qy        481 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 540

Db        929 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 988

Qy        541 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 600

Db        989 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 1048

Qy        601 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 660

Db       1049 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1108

Qy        661 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 720

Db       1109 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1168

Qy        721 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 780

Db       1169 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1228

Qy        781 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 840

Db       1229 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1288

Qy        841 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 900

Db       1289 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1348

Qy        901 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 960

Db       1349 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1408

Qy        961 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1020

Db       1409 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1468

Qy       1021 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1080

Db       1469 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1528

Qy       1081 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1140

Db       1529 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1588

Qy       1141 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1200

Db       1589 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1648

Qy       1201 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1260

Db       1649 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1708

Qy       1261 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1320

Db       1709 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1768

Qy       1321 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1380

Db       1769 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1828

Qy       1381 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1440

Db       1829 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1888

Qy       1441 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1500

Db       1889 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1948

Qy       1501 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1533

Db       1949 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1981
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RESULT 3
US-10-120-988-324
; Sequence 324, Application US/10120988
; Publication No. US20030219745A1
; GENERAL INFORMATION:
; APPLICANT: Tang, Y. Tom
; APPLICANT: Goodrich, Ryle
; APPLICANT: Liu, Chenghua
; APPLICANT: Ren, Feiyan
; APPLICANT: Wang, Dunrui
; APPLICANT: Drmanac, Radoje T.
; TITLE OF INVENTION: No. US20030219745Alel Nucleic Acids and
; TITLE OF INVENTION: Polypeptides
; FILE REFERENCE: 802CON
; CURRENT APPLICATION NUMBER: US/10/120,988
; CURRENT FILING DATE: 2002-04-11
; PRIOR APPLICATION NUMBER: 09/774,528
; PRIOR FILING DATE: 2001-01-30
; NUMBER OF SEQ ID NOS: 441
; SOFTWARE: pt_FL_genes Version 2.0
; SEQ ID NO 324
; LENGTH: 3639
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (371)..(1903)
US-10-120-988-324

Query Match 99.8%; Score 1529.8; DB 15; Length 3639;
Best Local Similarity 99.9%; Pred. No. 0;
Matches 1531; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

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Qy          1 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 60

Db        371 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 430

Qy         61 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 120

Db        431 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 490

Qy        121 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 180

Db        491 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 550

Qy        181 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 240

Db        551 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 610

Qy        241 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 300

Db        611 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 670

Qy        301 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 360

Db        671 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 730

Qy        361 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 420

Db        731 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 790

Qy        421 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 480
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Db        791 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 850

Qy        481 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 540

Db        851 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 910

Qy        541 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 600

Db        911 TACCTGTGCGCACAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 970

Qy        601 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 660

Db        971 AACCTGCGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1030

Qy        661 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 720

Db       1031 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1090

Qy        721 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 780

Db       1091 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1150

Qy        781 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 840

Db       1151 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1210

Qy        841 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 900

Db       1211 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1270

Qy        901 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 960

Db       1271 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1330

Qy        961 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1020

Db       1331 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1390

Qy       1021 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1080

Db       1391 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1450

Qy       1081 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1140

Db       1451 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1510

Qy       1141 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1200

Db       1511 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1570

Qy       1201 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1260

Db       1571 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1630

Qy       1261 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1320

Db       1631 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1690

Qy       1321 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1380

Db       1691 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1750

Qy       1381 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1440

Db       1751 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1810

Qy       1441 TACATGATAGGAATACTCTTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1500

Db       1811 TACATGATAGGAATACTCTTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1870

Qy       1501 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1533
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Db       1871 AGAAGAAAATACATGGATGGTGCACATGTTTAG 1903


RESULT 4
US-10-380-727-46
; Sequence 46, Application US/10380727
; Publication No. US20040024183A1
; GENERAL INFORMATION:
;  APPLICANT: INCYTE GENOMICS, INC.; LEE, Ernestine A.;
;  APPLICANT:  YUE, Henry; LAL, Preeti G.;
;  APPLICANT:  CHAWLA, Narinder K.; BAUGHN, Mariah R.;
;  APPLICANT:  WARREN, Bridget A.; LEE, Sally;
;  APPLICANT:  SANJANWALA, Madhu S.; YAO, Monique G.;
;  APPLICANT:  RAMKUMAR, Jayalaxmi; THORNTON, Michael;
;  APPLICANT:  GANDHI, Ameena R.; POLICKY, Jennifer L.;
;  APPLICANT:  ELLIOTT, Vicki S.; ARVIZU, Chandra;
;  APPLICANT:  RAUMANN, Brigitte E.; BRUNS, Christopher M.;
;  APPLICANT:  NAINA, Amir; HAFALIA, April J.A.;
;  APPLICANT:  NGUYEN, Danniel B.; XU, Yuming;
;  APPLICANT:  LU, Dyung Aina M.; ISON, Craig H.;
;  APPLICANT:  GRIFFIN, Jennifer A.; REDDY, Roopa M.;
;  APPLICANT:  BURFORD, Neil
;  TITLE OF INVENTION: TRANSPORTERS AND ION CHANNELS
;  FILE REFERENCE: PI-0217 USN
;  CURRENT APPLICATION NUMBER: US/10/380,727
;  CURRENT FILING DATE:  2003-03-14
;  PRIOR APPLICATION NUMBER: PCT/US01/28938
;  PRIOR FILING DATE: 2001-09-14
;  PRIOR APPLICATION NUMBER: US 60/241,700
;  PRIOR FILING DATE: 2000-10-18
;  PRIOR APPLICATION NUMBER: US 60/240,540
;  PRIOR FILING DATE: 2000-10-13
;  PRIOR APPLICATION NUMBER: US 60/239,057
;  PRIOR FILING DATE: 2000-10-05
;  PRIOR APPLICATION NUMBER: US 60/236,882
;  PRIOR FILING DATE: 2000-09-29
;  PRIOR APPLICATION NUMBER: US 60/234,842
;  PRIOR FILING DATE: 2000-09-22
;  PRIOR APPLICATION NUMBER: US 60/232,685
;  PRIOR FILING DATE: 2000-09-15
;  NUMBER OF SEQ ID NOS: 52
;  SOFTWARE: PERL Program
; SEQ ID NO 46
;   LENGTH: 1867
;   TYPE: DNA
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: misc_feature
;   OTHER INFORMATION: Incyte ID No. US20040024183A1 3586648CB1
US-10-380-727-46

  Query Match             90.3%;  Score 1384.4;  DB 16;  Length 1867;
  Best Local Similarity   99.6%;  Pred. No. 0;
  Matches 1388;  Conservative    0;  Mismatches    6;  Indels    0;  Gaps    0;

Qy          1 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 60

Db        386 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 445

Qy         61 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 120

Db        446 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 505

Qy        121 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 180

Db        506 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 565

Qy        181 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 240

Db        566 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 625

Qy        241 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 300
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Db        626 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 685
Qy        301 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 360
Db        686 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 745
Qy        361 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 420
Db        746 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 805
Qy        421 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 480
Db        806 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 865
Qy        481 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 540
Db        866 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 925
Qy        541 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 600
Db        926 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 985
Qy        601 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 660
Db        986 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1045
Qy        661 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 720
Db       1046 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1105
Qy        721 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 780
Db       1106 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1165
Qy        781 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 840
Db       1166 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1225
Qy        841 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 900
Db       1226 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1285
Qy        901 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 960
Db       1286 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1345
Qy        961 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1020
Db       1346 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1405
Qy       1021 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1080
Db       1406 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1465
Qy       1081 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1140
Db       1466 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1525
Qy       1141 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1200
Db       1526 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1585
Qy       1201 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1260
Db       1586 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1645
Qy       1261 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1320
Db       1646 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1705
Qy       1321 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1380
Db       1706 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1765
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Qy       1381 GGGTGGATCTATGA 1394
              ||     ||| |||
Db       1766 GGTAAACTCTCTGA 1779
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RESULT 5
US-10-094-749-357
; Sequence 357, Application US/10094749
; Publication No. US20030219741A1
; GENERAL INFORMATION:
; APPLICANT: ISOGAI, TAKAO
; APPLICANT: SUGIYAMA, TOMOYASU
; APPLICANT: OTSUKI, TETSUJI
; APPLICANT: WAKAMATSU, AI
; APPLICANT: SATO, HIROYUKI
; APPLICANT: ISHII, SHIZUKO
; APPLICANT: YAMAMOTO, JUN-ICHI
; APPLICANT: ISONO, YUUKO
; APPLICANT: HIO, YURI
; APPLICANT: OTSUKA, KAORU
; APPLICANT: NAGAI, KEIICHI
; APPLICANT: IRIE, RYOTARO
; APPLICANT: TAMECHIKA, ICHIRO
; APPLICANT: SEKI, NAOHIKO
; APPLICANT: YOSHIKAWA, TSUTOMU
; APPLICANT: OTSUKA, MOTOYUKI
; APPLICANT: NAGAHARI, KENJI
; APPLICANT: MASUHO, YASUHIKO
; TITLE OF INVENTION: NOVEL FULL-LENGTH cDNA
; FILE REFERENCE: 084335/0160
; CURRENT APPLICATION NUMBER: US/10/094,749
; CURRENT FILING DATE: 2002-03-12
; PRIOR APPLICATION NUMBER: 60/350,435
; PRIOR FILING DATE: 2002-01-24
; PRIOR APPLICATION NUMBER: JP 2001-328381
; PRIOR FILING DATE: 2001-09-14
; NUMBER OF SEQ ID NOS: 3381
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 357
; LENGTH: 3645
; TYPE: DNA
; ORGANISM: Homo sapiens
US-10-094-749-357

Query Match 69.3%; Score 1062.4; DB 15; Length 3645;
Best Local Similarity 99.9%; Pred. No. 0;
Matches 1063; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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Qy        470 GCGCCCTCGCCCAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTG 529
Db        186 GCGCCCTCGCCCAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTG 245
Qy        530 TGCTGCTGAAGTACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTG 589
Db        246 TGCTGCTGAAGTACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTG 305
Qy        590 CCGTTTCCCTAAACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAA 649
Db        306 CCGTTTCCCTAAACCTGTGTGTTTGTGGGGCGCTCACGAGGCCCCTCTCTCCTGGTAAAA 365
Qy        650 ACCCAAACGACCCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTG 709
Db        366 ACCCAAACGACCCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTG 425
Qy        710 TGAAGTCAACTGGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGG 769
Db        426 TGAAGTCAACTGGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGG 485
Qy        770 AGACCCTCTGCGACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACA 829
Db        486 AGACCCTCTGCGACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACA 545
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DB:                 13          Gaps:          0

US-10-074-547-2 (1-510) x US-10-074-547-1 (1-4419)

Qy          1 MetTyrThrSerHisGluAspIleGlyTyrAspPheGluAspGlyProLysAspLysLys 20
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        449 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 508

Qy         21 ThrLeuLysProHisProAsnIleAspGlyGlyTrpAlaTrpMetMetValLeuSerSer 40
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        509 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 568

Qy         41 PhePheValHisIleLeuIleMetGlySerGlnMetAlaLeuGlyValLeuAsnValGlu 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        569 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 628

Qy         61 TrpLeuGluGluPheHisGlnSerArgGlyLeuThrAlaTrpValSerSerLeuSerMet 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        629 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 688

Qy         81 GlyIleThrLeuIleValGlyProPheIleGlyLeuPheIleAsnThrCysGlyCysArg 100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        689 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 748

Qy        101 GlnThrAlaIleIleGlyGlyLeuValAsnSerLeuGlyTrpValLeuSerAlaTyrAla 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        749 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 808

Qy        121 AlaAsnValHisTyrLeuPheIleThrPheGlyValAlaAlaGlyLeuGlySerGlyMet 140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        809 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 868

Qy        141 AlaTyrLeuProAlaValValMetValGlyArgTyrPheGlnLysArgArgAlaLeuAla 160
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        869 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 928

Qy        161 GlnGlyLeuSerThrThrGlyThrGlyPheGlyThrPheLeuMetThrValLeuLeuLys 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        929 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 988

Qy        181 TyrLeuCysAlaGluTyrGlyTrpArgAsnAlaMetLeuIleGlnGlyAlaValSerLeu 200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        989 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 1048

Qy        201 AsnLeuCysValCysGlyAlaLeuMetArgProLeuSerProGlyLysAsnProAsnAsp 220
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1049 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1108

Qy        221 ProGlyGluLysAspValArgGlyLeuProAlaHisSerThrGluSerValLysSerThr 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1109 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1168

Qy        241 GlyGlnGlnGlyArgThrGluGluLysAspGlyGlyLeuGlyAsnGluGluThrLeuCys 260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1169 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1228

Qy        261 AspLeuGlnAlaGlnGluCysProAspGlnAlaGlyHisArgLysAsnMetCysAlaLeu 280
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1229 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1288

Qy        281 ArgIleLeuLysThrValSerTrpLeuThrMetArgValArgLysGlyPheGluAspTrp 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1289 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1348

Qy        301 TyrSerGlyTyrPheGlyThrAlaSerLeuPheThrAsnArgMetPheValAlaPheIle 320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1349 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1408

Qy        321 PheTrpAlaLeuPheAlaTyrSerSerPheValIleProPheIleHisLeuProGluIle 340
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1409 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1468

Qy        341 ValAsnLeuTyrAsnLeuSerGluGlnAsnAspValProLeuThrSerIleIleAla 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1469 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1528

Qy        361 IleValHisIlePheGlyLysValIleLeuGlyValIleAlaAspLeuProCysIleSer 380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1529 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1588

Qy        381 ValTrpAsnValPheLeuLeuAlaAsnPheThrLeuValLeuSerIlePheIleLeuPro 400
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1589 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1648

Qy        401 LeuMetHisThrTyrAlaGlyLeuAlaValIleCysAlaLeuIleGlyPheSerSerGly 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1649 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1708

Qy        421 TyrPheSerLeuMetProValValThrGluAspLeuValGlyIleGluHisLeuAlaAsn 440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1709 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1768

Qy        441 AlaTyrGlyIleIleIleCysAlaAsnGlyIleSerAlaLeuLeuGlyProProPheAla 460
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1769 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1828

Qy        461 GlyTrpIleTyrAspIleThrGlnLysTyrAspPheSerPheTyrIleCysGlyLeuLeu 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1829 GGGTGGATCTATGACATCACGCAAAAATATGATTTTTCCTTCTACATATGTGGTTTGCTT 1888

Qy        481 TyrMetIleGlyIleLeuPheLeuLeuIleGlnProCysIleArgIleIleGluGlnSer 500
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1889 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1948

Qy        501 ArgArgLysTyrMetAspGlyAlaHisVal 510
              |||||||||||||||||||||||||||||
Db       1949 AGAAGAAAATACATGGATGGTGCACATGTT 1978

RESULT 3
US-10-120-988-324
; Sequence 324, Application US/10120988
; Publication No. US20030219745A1
; GENERAL INFORMATION:
;  APPLICANT: Tang, Y. Tom
;  APPLICANT:  Goodrich, Ryle
;  APPLICANT:  Liu, Chenghua
;  APPLICANT:  Ren, Feiyan
;  APPLICANT:  Wang, Dunrui
;  APPLICANT:  Drmanac, Radoje T.
;  TITLE OF INVENTION: No. US20030219745A1el Nucleic Acids and
;  TITLE OF INVENTION:  Polypeptides
;  FILE REFERENCE: 802CON
;  CURRENT APPLICATION NUMBER: US/10/120,988
;  CURRENT FILING DATE:  2002-04-11
;  PRIOR APPLICATION NUMBER: 09/774,528
;  PRIOR FILING DATE: 2001-01-30
;  NUMBER OF SEQ ID NOS: 441
;  SOFTWARE: pt_FL_genes Version 2.0
; SEQ ID NO 324
;   LENGTH: 3639
;   TYPE: DNA
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (371)..(1903)
US-10-120-988-324

Alignment Scores:
Pred. No.:                3.46e-292       Length:          3639
Score:                    2681.00         Matches:         508
Percent Similarity:       99.80%          Conservative:    1
Best Local Similarity:    99.61%          Mismatches:      1
Query Match:              99.44%          Indels:          0
DB:                       15              Gaps:            0

US-10-074-547-2 (1-510) x US-10-120-988-324 (1-3639)
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Qy          1 MetTyrThrSerHisGluAspIleGlyTyrAspPheGluAspGlyProLysAspLysLys 20
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        371 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 430

Qy         21 ThrLeuLysProHisProAsnIleAspGlyGlyTrpAlaTrpMetMetValLeuSerSer 40
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        431 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 490

Qy         41 PhePheValHisIleLeuIleMetGlySerGlnMetAlaLeuGlyValLeuAsnValGlu 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        491 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 550

Qy         61 TrpLeuGluGluPheHisGlnSerArgGlyLeuThrAlaTrpValSerSerLeuSerMet 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        551 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 610

Qy         81 GlyIleThrLeuIleValGlyProPheIleGlyLeuPheIleAsnThrCysGlyCysArg 100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        611 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 670

Qy        101 GlnThrAlaIleIleGlyGlyLeuValAsnSerLeuGlyTrpValLeuSerAlaTyrAla 120
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Db        671 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 730

Qy        121 AlaAsnValHisTyrLeuPheIleThrPheGlyValAlaAlaGlyLeuGlySerGlyMet 140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        731 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 790

Qy        141 AlaTyrLeuProAlaValValMetValGlyArgTyrPheGlnLysArgArgAlaLeuAla 160
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Db        791 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 850

Qy        161 GlnGlyLeuSerThrThrGlyThrGlyPheGlyThrPheLeuMetThrValLeuLeuLys 180
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Db        851 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 910

Qy        181 TyrLeuCysAlaGluTyrGlyTrpArgAsnAlaMetLeuIleGlnGlyAlaValSerLeu 200
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Db        911 TACCTGTGCGCACAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 970

Qy        201 AsnLeuCysValCysGlyAlaLeuMetArgProLeuSerProGlyLysAsnProAsnAsp 220
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Db        971 AACCTGCGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1030

Qy        221 ProGlyGluLysAspValArgGlyLeuProAlaHisSerThrGluSerValLysSerThr 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1031 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1090

Qy        241 GlyGlnGlnGlyArgThrGluGluLysAspGlyGlyLeuGlyAsnGluGluThrLeuCys 260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1091 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1150

Qy        261 AspLeuGlnAlaGlnGluCysProAspGlnAlaGlyHisArgLysAsnMetCysAlaLeu 280
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Db       1151 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1210

Qy        281 ArgIleLeuLysThrValSerTrpLeuThrMetArgValArgLysGlyPheGluAspTrp 300
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Db       1211 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1270

Qy        301 TyrSerGlyTyrPheGlyThrAlaSerLeuPheThrAsnArgMetPheValAlaPheIle 320
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Db       1271 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1330

Qy        321 PheTrpAlaLeuPheAlaTyrSerSerPheValIleProPheIleHisLeuProGluIle 340
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Db       1331 TTCTGGGCTTTGTTTGCATACAGCAGCTTTGTCATCCCCTTCATTCACCTCCCAGAAATC 1390

Qy        341 ValAsnLeuTyrAsnLeuSerGluGlnAsnAspValPheProLeuThrSerIleIleAla 360
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Db       1391 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1450

Qy        361 IleValHisIlePheGlyLysValIleLeuGlyValIleAlaAspLeuProCysIleSer 380
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Db       1451 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1510

Qy        381 ValTrpAsnValPheLeuLeuAlaAsnPheThrLeuValLeuSerIlePheIleLeuPro 400
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Db       1511 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1570

Qy        401 LeuMetHisThrTyrAlaGlyLeuAlaValIleCysAlaLeuIleGlyPheSerSerGly 420
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Db       1571 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1630

Qy        421 TyrPheSerLeuMetProValValThrGluAspLeuValGlyIleGluHisLeuAlaAsn 440
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Db       1631 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1690

Qy        441 AlaTyrGlyIleIleIleCysAlaAsnGlyIleSerAlaLeuLeuGlyProProPheAla 460
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Db       1691 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1750

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Qy        481 TyrMetIleGlyIleLeuPheLeuLeuIleGlnProCysIleArgIleIleGluGlnSer 500
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Db       1811 TACATGATAGGAATACTCTTTTTACTTATTCAGCCGTGCATTCGAATTATAGAACAATCC 1870

Qy        501 ArgArgLysTyrMetAspGlyAlaHisVal 510
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RESULT 4
US-10-380-727-46
; Sequence 46, Application US/10380727
; Publication No. US20040024183A1
; GENERAL INFORMATION:
; APPLICANT: INCYTE GENOMICS, INC.; LEE, Ernestine A.;
; APPLICANT: YUE, Henry; LAL, Preeti G.;
; APPLICANT: CHAWLA, Narinder K.; BAUGHN, Mariah R.;
; APPLICANT: WARREN, Bridget A.; LEE, Sally;
; APPLICANT: SANJANWALA, Madhu S.; YAO, Monique G.;
; APPLICANT: RAMKUMAR, Jayalaxmi; THORNTON, Michael;
; APPLICANT: GANDHI, Ameena R.; POLICKY, Jennifer L.;
; APPLICANT: ELLIOTT, Vicki S.; ARVIZU, Chandra;
; APPLICANT: RAUMANN, Brigitte E.; BRUNS, Christopher M.;
; APPLICANT: NAINA, Amir; HAFALIA, April J.A.;
; APPLICANT: NGUYEN, Danniel B.; XU, Yuming;
; APPLICANT: LU, Dyung Aina M.; ISON, Craig H.;
; APPLICANT: GRIFFIN, Jennifer A.; REDDY, Roopa M.;
; APPLICANT: BURFORD, Neil
; TITLE OF INVENTION: TRANSPORTERS AND ION CHANNELS
; FILE REFERENCE: PI-0217 USN
; CURRENT APPLICATION NUMBER: US/10/380,727
; CURRENT FILING DATE: 2003-03-14
; PRIOR APPLICATION NUMBER: PCT/US01/28938
; PRIOR FILING DATE: 2001-09-14
; PRIOR APPLICATION NUMBER: US 60/241,700
; PRIOR FILING DATE: 2000-10-18
; PRIOR APPLICATION NUMBER: US 60/240,540
; PRIOR FILING DATE: 2000-10-13
; PRIOR APPLICATION NUMBER: US 60/239,057
; PRIOR FILING DATE: 2000-10-05
; PRIOR APPLICATION NUMBER: US 60/236,882
; PRIOR FILING DATE: 2000-09-29
; PRIOR APPLICATION NUMBER: US 60/234,842
; PRIOR FILING DATE: 2000-09-22
; PRIOR APPLICATION NUMBER: US 60/232,685
; PRIOR FILING DATE: 2000-09-15
; NUMBER OF SEQ ID NOS: 52
; SOFTWARE: PERL Program
; SEQ ID NO 46
; LENGTH: 1867

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Db       1237 GTCAATTTGTATAACTTATCGGAGCAAAACGACGTTTTCCCTCTGACGTCAATTATAGCA 1296

Qy        361 IleValHisIlePheGlyLysValIleLeuGlyValIleAlaAspLeuProCysIleSer 380
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Db       1297 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1356

Qy        381 ValTrpAsnValPheLeuLeuAlaAsnPheThrLeuValLeuSerIlePheIleLeuPro 400
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Db       1357 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1416

Qy        401 LeuMetHisThrTyrAlaGlyLeuAlaValIleCysAlaLeuIleGlyPheSerSerGly 420
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Db       1417 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1476

Qy        421 TyrPheSerLeuMetProValValThrGluAspLeuValGlyIleGluHisLeuAlaAsn 440
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Db       1477 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1536

Qy        441 AlaTyrGlyIleIleIleCysAlaAsnGlyIleSerAlaLeuLeuGlyProProPheAla 460
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Db       1537 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1596

Qy        461 GlyTrpIleTyrAspIle 466
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Db       1597 GGTAAACTCTCTGAGGTT 1614

RESULT 5
AX405579
LOCUS       AX405579                1867 bp    DNA     linear   PAT 14-JUN-2002
DEFINITION  Sequence 46 from Patent WO0222684.
ACCESSION   AX405579
VERSION     AX405579.1  GI:21438604
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
REFERENCE   1
  AUTHORS   Lee,E.A., Yue,H., Lal,P.G., Walia,N.K., Baughn,M.R., Warren,B.A.,
            Lee,S., Sanjanwala,M.S., Yao,M.G., Ramkumar,J., Thornton,M.,
            Gandhi,A.R., Policky,J.L., Elliott,V.S., Arvizu,C., Raumann,B.E.,
            Bruns,C.M., Naini,A., Hafalia,A.J., Nguyen,D.B., Xu,Y., Lu,D.A.,
            Ison,C.H., Griffin,J.A., Reddy,R.M. and Burford,N.
  TITLE     Transporters and ion channels
  JOURNAL   Patent: WO 0222684-A 46 21-MAR-2002;
            Incyte Genomics, Inc. (US)
FEATURES             Location/Qualifiers
     source          1. .1867
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                     /mol_type="unassigned DNA"
                     /db_xref="taxon:9606"
                     /note="Incyte ID No: 3586648CB1"
ORIGIN

Alignment Scores:
Pred. No.:                1.65e-204      Length:          1867
Score:                    2433.00        Matches:         461
Percent Similarity:       99.57%         Conservative:    3
Best Local Similarity:    98.93%         Mismatches:      2
Query Match:              90.24%         Indels:          0
DB:                       6              Gaps:            0

US-10-074-547-2 (1-510) x AX405579 (1-1867)

Qy          1 MetTyrThrSerHisGluAspIleGlyTyrAspPheGluAspGlyProLysAspLysLys 20
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Db        386 ATGTATACCAGTCATGAAGATATTGGGTATGATTTTGAAGATGGCCCCAAAGACAAAAAG 445

Qy         21 ThrLeuLysProHisProAsnIleAspGlyGlyTrpAlaTrpMetMetValLeuSerSer 40
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Db        446 ACACTGAAGCCCCACCCAAACATTGATGGCGGATGGGCTTGGATGATGGTGCTCTCCTCT 505

Qy         41 PhePheValHisIleLeuIleMetGlySerGlnMetAlaLeuGlyValLeuAsnValGlu 60
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Db        506 TTCTTTGTGCACATCCTCATCATGGGCTCCCAGATGGCCCTGGGTGTCCTCAACGTGGAA 565

Qy         61 TrpLeuGluGluPheHisGlnSerArgGlyLeuThrAlaTrpValSerSerLeuSerMet 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        566 TGGCTGGAAGAATTCCACCAGAGCCGCGGCCTGACCGCCTGGGTCAGCTCCCTCAGCATG 625

Qy         81 GlyIleThrLeuIleValGlyProPheIleGlyLeuPheIleAsnThrCysGlyCysArg 100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        626 GGCATCACCTTGATAGTGGGCCCTTTCATCGGCTTGTTCATTAACACCTGTGGGTGCCGC 685

Qy        101 GlnThrAlaIleIleGlyGlyLeuValAsnSerLeuGlyTrpValLeuSerAlaTyrAla 120
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Db        686 CAGACTGCGATCATTGGAGGGCTCGTCAACTCCCTGGGCTGGGTGTTGAGTGCCTATGCT 745

Qy        121 AlaAsnValHisTyrLeuPheIleThrPheGlyValAlaAlaGlyLeuGlySerGlyMet 140
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Db        746 GCAAACGTGCATTATCTCTTCATTACTTTTGGAGTCGCAGCTGGCCTGGGCAGCGGGATG 805

Qy        141 AlaTyrLeuProAlaValValMetValGlyArgTyrPheGlnLysArgArgAlaLeuAla 160
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Db        806 GCCTACCTGCCAGCGGTGGTCATGGTGGGCAGGTATTTCCAGAAGAGACGCGCCCTCGCC 865

Qy        161 GlnGlyLeuSerThrThrGlyThrGlyPheGlyThrPheLeuMetThrValLeuLeuLys 180
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Db        866 CAGGGCCTCAGCACCACGGGGACCGGATTCGGTACGTTCCTAATGACTGTGCTGCTGAAG 925

Qy        181 TyrLeuCysAlaGluTyrGlyTrpArgAsnAlaMetLeuIleGlnGlyAlaValSerLeu 200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        926 TACCTGTGCGCAGAGTACGGCTGGAGGAATGCCATGTTGATCCAAGGTGCCGTTTCCCTA 985

Qy        201 AsnLeuCysValCysGlyAlaLeuMetArgProLeuSerProGlyLysAsnProAsnAsp 220
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        986 AACCTGTGTGTTTGTGGGGCGCTCATGAGGCCCCTCTCTCCTGGTAAAAACCCAAACGAC 1045

Qy        221 ProGlyGluLysAspValArgGlyLeuProAlaHisSerThrGluSerValLysSerThr 240
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Db       1046 CCAGGAGAGAAAGATGTGCGTGGCCTGCCAGCGCACTCCACAGAATCTGTGAAGTCAACT 1105

Qy        241 GlyGlnGlnGlyArgThrGluGluLysAspGlyGlyLeuGlyAsnGluGluThrLeuCys 260
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Db       1106 GGACAGCAGGGAAGAACAGAAGAGAAGGATGGTGGGCTCGGGAACGAGGAGACCCTCTGC 1165

Qy        261 AspLeuGlnAlaGlnGluCysProAspGlnAlaGlyHisArgLysAsnMetCysAlaLeu 280
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Db       1166 GACCTGCAAGCCCAGGAGTGCCCCGATCAGGCCGGGCACAGGAAGAACATGTGTGCCCTC 1225

Qy        281 ArgIleLeuLysThrValSerTrpLeuThrMetArgValArgLysGlyPheGluAspTrp 300
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Db       1226 CGGATTCTGAAGACTGTCAGCTGGCTCACCATGAGAGTCAGGAAGGGCTTCGAGGACTGG 1285

Qy        301 TyrSerGlyTyrPheGlyThrAlaSerLeuPheThrAsnArgMetPheValAlaPheIle 320
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Db       1286 TATTCGGGCTACTTTGGGACAGCCTCTCTATTTACAAATCGAATGTTTGTAGCCTTTATT 1345

Qy        321 PheTrpAlaLeuPheAlaTyrSerSerPheValIleProPheIleHisLeuProGluIle 340
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Db       1466 ATAGTTCACATCTTTGGAAAAGTGATCCTGGGCGTCATAGCCGACTTGCCTTGCATTAGT 1525

Qy        381 ValTrpAsnValPheLeuLeuAlaAsnPheThrLeuValLeuSerIlePheIleLeuPro 400
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Db       1526 GTTTGGAATGTCTTCCTGTTGGCCAACTTCACCCTTGTCCTCAGTATTTTTATTCTGCCG 1585

Qy        401 LeuMetHisThrTyrAlaGlyLeuAlaValIleCysAlaLeuIleGlyPheSerSerGly 420
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Db       1586 TTGATGCACACGTACGCTGGCCTGGCGGTCATCTGTGCGCTGATAGGGTTTTCCAGTGGT 1645

Qy        421 TyrPheSerLeuMetProValValThrGluAspLeuValGlyIleGluHisLeuAlaAsn 440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1646 TATTTCTCCCTAATGCCCGTAGTGACTGAAGACTTGGTTGGCATTGAACACCTGGCCAAT 1705

Qy        441 AlaTyrGlyIleIleIleCysAlaAsnGlyIleSerAlaLeuLeuGlyProProPheAla 460
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Db       1706 GCCTACGGCATCATCATCTGTGCTAATGGCATCTCTGCATTGCTGGGACCACCTTTTGCA 1765

Qy        461 GlyTrpIleTyrAspIle 466
              |||   :::   ::::::
Db       1766 GGTAAACTCTCTGAGGTT 1783
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RESULT 6
BC023456
LOCUS BC023456 2363 bp mRNA linear ROD 07-OCT-2003
DEFINITION Mus musculus RIKEN cDNA 1110004H10 gene, mRNA (cDNA clone MGC:32427 IMAGE:5041164), complete cds.
ACCESSION BC023456
VERSION BC023456.1 GI:22169914
KEYWORDS MGC.
SOURCE Mus musculus (house mouse)
ORGANISM Mus musculus
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
REFERENCE 1 (bases 1 to 2363)
AUTHORS Strausberg,R.L., Feingold,E.A., Grouse,L.H., Derge,J.G., Klausner,R.D., Collins,F.S., Wagner,L., Shenmen,C.M., Schuler,G.D., Altschul,S.F., Zeeberg,B., Buetow,K.H., Schaefer,C.F., Bhat,N.K., Hopkins,R.F., Jordan,H., Moore,T., Max,S.I., Wang,J., Hsieh,F., Diatchenko,L., Marusina,K., Farmer,A.A., Rubin,G.M., Hong,L., Stapleton,M., Soares,M.B., Bonaldo,M.F., Casavant,T.L., Scheetz,T.E., Brownstein,M.J., Usdin,T.B., Toshiyuki,S., Carninci,P., Prange,C., Raha,S.S., Loquellano,N.A., Peters,G.J., Abramson,R.D., Mullahy,S.J., Bosak,S.A., McEwan,P.J., McKernan,K.J., Malek,J.A., Gunaratne,P.H., Richards,S., Worley,K.C., Hale,S., Garcia,A.M., Gay,L.J., Hulyk,S.W., Villalon,D.K., Muzny,D.M., Sodergren,E.J., Lu,X., Gibbs,R.A., Fahey,J., Helton,E., Ketteman,M., Madan,A., Rodrigues,S., Sanchez,A., Whiting,M., Madan,A., Young,A.C., Shevchenko,Y., Bouffard,G.G., Blakesley,R.W., Touchman,J.W., Green,E.D., Dickson,M.C., Rodriguez,A.C., Grimwood,J., Schmutz,J., Myers,R.M., Butterfield,Y.S., Krzywinski,M.I., Skalska,U., Smailus,D.E., Schnerch,A., Schein,J.E., Jones,S.J. and Marra,M.A.
TITLE Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 99 (26), 16899-16903 (2002)
MEDLINE 22388257
PUBMED 12477932
REFERENCE 2 (bases 1 to 2363)
AUTHORS Strausberg,R.
TITLE Direct Submission
JOURNAL Submitted (05-FEB-2002) National Institutes of Health, Mammalian Gene Collection (MGC), Cancer Genomics Office, National Cancer Institute, 31 Center Drive, Room 11A03, Bethesda, MD 20892-2590, USA
REMARK NIH-MGC Project URL: http://mgc.nci.nih.gov
COMMENT Contact: MGC help desk
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Jeffrey E. Green, M.D.
cDNA Library Preparation: Life Technologies, Inc.
cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Baylor College of Medicine Human Genome Sequencing Center
Center code: BCM-HGSC
Web site: http://www.hgsc.bcm.tmc.edu/cdna/
Contact: amg@bcm.tmc.edu
Gunaratne, P.H., Garcia, A.M., Lu, X., Hulyk, S.W., Loulseged, H., Kowis, C.R., Sneed, A.J., Martin, R.G., Muzny, D.M., Nanavati, A.N., Gibbs, R.A.

Clone distribution: MGC clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov
Series: IRAK Plate: 45 Row: k Column: 1
This clone was selected for full length sequencing because it passed the following selection criteria: Hexamer frequency ORF analysis.

FEATURES Location/Qualifiers
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/strain="FVB/N"
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/clone_lib="NCI_CGAP_Kid14"
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gene 1. .2363
/gene="1110004H10Rik"
/db_xref="LocusID:71781"
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CDS 238. .1776
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/protein_id="AAH23456.1"
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ORIGIN

Alignment Scores:

Pred. No.:	1.46e-195	Length:	2363
Score:	2333.00	Matches:	446
Percent Similarity:	92.19%	Conservative:	26
Best Local Similarity:	87.11%	Mismatches:	38
Query Match:	86.54%	Indels:	2
DB:	10	Gaps:	1

US-10-074-547-2 (1-510) x BC023456 (1-2363)

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Qy         19 LysLysThrLeuLysProHisProAsnIleAspGlyGlyTrpAlaTrpMetMetValLeu 38
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Db        298 AAGAAGACGCTGAAGCCCCACCCAGATATCGATGGCGGGTGGGCCTGGATGATGGTCCTC 357

Qy         39 SerSerPhePheValHisIleLeuIleMetGlySerGlnMetAlaLeuGlyValLeuAsn 58
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Qy         79 SerMetGlyIleThrLeuIleValGlyProPheIleGlyLeuPheIleAsnThrCysGly 98
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FILE 'HOME' ENTERED AT 14:04:47 ON 04 MAR 2004

=> file medline caplus biosis scisearch

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.84	0.84

FILE 'MEDLINE' ENTERED AT 14:07:00 ON 04 MAR 2004

FILE 'CAPLUS' ENTERED AT 14:07:00 ON 04 MAR 2004
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FILE 'BIOSIS' ENTERED AT 14:07:00 ON 04 MAR 2004

FILE 'SCISEARCH' ENTERED AT 14:07:00 ON 04 MAR 2004

=> s monocarboxylate(w)transporter?
L1 997 MONOCARBOXYLATE(W) TRANSPORTER?

=> s slc16
L2 8 SLC16

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3 5 DUP REM L2 (3 DUPLICATES REMOVED)

=> d ibib abs 1-5

L3 ANSWER 1 OF 5 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 2004068746 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12739169
TITLE: The **SLC16** gene family-from monocarboxylate transporters (MCTs) to aromatic amino acid transporters and beyond.
AUTHOR: Halestrap Andrew P; Meredith David
CORPORATE SOURCE: Department of Biochemistry, University of Bristol, BS8 1TD, Bristol, UK,. A.Halestrap@Bristol.ac.uk
SOURCE: Pflugers Archiv : European journal of physiology, (2004 Feb) 447 (5) 619-28.
Journal code: 0154720. ISSN: 0031-6768.
PUB. COUNTRY: Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-DATA-REVIEW; IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20040211
Last Updated on STN: 20040211
AB The monocarboxylate cotransporter (MCT) family now comprises 14 members, of which only the first four (MCT1-MCT4) have been demonstrated experimentally to catalyse the proton-linked transport of metabolically

important monocarboxylates such as lactate, pyruvate and ketone bodies. SLC16A10 (T-type amino-acid transporter-1, TAT1) is an aromatic amino acid transporter whilst the other members await characterization. MCTs have 12 transmembrane domains (TMDs) with intracellular N- and C-termini and a large intracellular loop between TMDs 6 and 7. MCT1 and MCT4 require a monotopic ancillary protein, CD147, for expression of functional protein at the plasma membrane. Lactic acid transport across the plasma membrane is fundamental for the metabolism of and pH regulation of all cells, removing lactic acid produced by glycolysis and allowing uptake by those cells utilizing it for gluconeogenesis (liver and kidney) or as a respiratory fuel (heart and red muscle). The properties of the different MCT isoforms and their tissue distribution and regulation reflect these roles.

L3 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:712649 CAPLUS
DOCUMENT NUMBER: 140:125986
TITLE: Diversity of amino acid transporters: molecular basis of disorder of amino acid metabolism
AUTHOR(S): Kanai, Yoshikatsu
CORPORATE SOURCE: School of Medicine and Pharmacology, Kyorin University, Japan
SOURCE: Molecular Medicine (Tokyo, Japan) (2003), 40(7), 782-790
CODEN: MOLMEL; ISSN: 0918-6557
PUBLISHER: Nakayama Shoten
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese
AB A review. The topics included are (1) diversity of amino acid transporters discussing the families of SLC1, SLC6, SLC7, **SLC16**, SLC25 and SLC38; (2) transepithelial amino acid transporters for neutral, basic and acidic amino acids in intestine and kidney; and (3) amino acid transporter abnormalities in cystinuria, lysinuric protein intolerance, Hartnup disorder, blue diaper syndrome, cystinosis and citrullinemia.

L3 ANSWER 3 OF 5 MEDLINE on STN DUPLICATE 2
ACCESSION NUMBER: 2003548466 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12946269
TITLE: The loop between helix 4 and helix 5 in the monocarboxylate transporter MCT1 is important for substrate selection and protein stability.
AUTHOR: Galic Sandra; Schneider Hans-Peter; Broer Angelika; Deitmer Joachim W; Broer Stefan
CORPORATE SOURCE: School of Biochemistry & Molecular Biology, Australian National University, Canberra ACT 0200, Australia.
SOURCE: Biochemical journal, (2003 Dec 1) 376 (Pt 2) 413-22. Journal code: 2984726R. ISSN: 1470-8728.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200312
ENTRY DATE: Entered STN: 20031121
Last Updated on STN: 20031219
Entered Medline: 20031202
AB Transport of lactate, pyruvate and the ketone bodies acetoacetate and beta-hydroxybutyrate, is mediated in most mammalian cells by members of the monocarboxylate transporter family (**SLC16**). A conserved signature sequence has been identified in this family, which is located in the loop between helix 4 and helix 5 and extends into helix 5. We have mutated residues in this signature sequence in the rat monocarboxylate

transporter (MCT1) to elucidate the significance of this region for monocarboxylate transport. Mutation of R143 and G153 resulted in complete inactivation of the transporter. For the MCT1(G153V) mutant this was explained by a failure to reach the plasma membrane. The lack of transport activity of MCT1(R143Q) could be partially rescued by the conservative exchange R143H. The resulting mutant transporter displayed reduced stability, a decreased V (max) of lactate transport but not of acetate transport, and an increased stereoselectivity. Mutation of K137, K141 and K142 indicated that only K142 played a significant role in the transport mechanism. Mutation of K142 to glutamine resulted in an increase of the K (m) for lactate from 5 mM to 12 mM. In contrast with MCT1(R143H), MCT1(K142Q) was less stereoselective than the wild-type. A mechanism is proposed that includes all critical residues.

L3 ANSWER 4 OF 5 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2004:10980 SCISEARCH
THE GENUINE ARTICLE: 753UY
TITLE: The loop between helix 4 and helix 5 in the monocarboxylate transporter MCT1 is important for substrate selection and protein stability
AUTHOR: Galic S; Schneider H P; Broer A; Deitmer J W; Broer S (Reprint)
CORPORATE SOURCE: Australian Natl Univ, Sch Biochem & Mol Biol, Canberra, ACT 0200, Australia (Reprint); Univ Kaiserslautern, FB Biol, Abt Allgemeine Zool, D-67653 Kaiserslautern, Germany
COUNTRY OF AUTHOR: Australia; Germany
SOURCE: BIOCHEMICAL JOURNAL, (1 DEC 2003) Vol. 376, Part 2, pp. 413-422.
Publisher: PORTLAND PRESS, 59 PORTLAND PLACE, LONDON W1N 3AJ, ENGLAND.
ISSN: 0264-6021.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 23
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Transport of lactate, pyruvate and the ketone bodies acetoacetate and beta-hydroxybutyrate, is mediated in most mammalian cells by members of the monocarboxylate transporter family (**SLC16**). A conserved signature sequence has been identified in this family, which is located in the loop between helix 4 and helix 5 and extends into helix 5. We have mutated residues in this signature sequence in the rat monocarboxylate transporter (MCTI) to elucidate the significance of this region for monocarboxylate transport. Mutation of R143 and G153 resulted in complete inactivation of the transporter. For the MCT1(G153V) mutant this was explained by a failure to reach the plasma membrane. The lack of transport activity of MCT1(R143Q) could be partially rescued by the conservative exchange R143H. The resulting mutant transporter displayed reduced stability, a decreased V-max of lactate transport but not of acetate transport, and an increased stereoselectivity. Mutation of K137, K141 and K142 indicated that only K142 played a significant role in the transport mechanism. Mutation of K142 to glutamine resulted in an increase of the Km for lactate from 5 mM to 12 mM. In contrast with MCTI(R143H), MCT1(K142Q) was less stereoselective than the wild-type. A mechanism is proposed that includes all critical residues.

L3 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:634317 CAPLUS
DOCUMENT NUMBER: 137:180837
TITLE: cDNA and protein sequences of human monocarboxylate transporter sequence homolog protein 25466 and their uses

INVENTOR(S): Curtis, Rory A. J.
PATENT ASSIGNEE(S): Millenium Pharmaceuticals, Inc., USA
SOURCE: Eur. Pat. Appl., 57 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1233024	A2	20020821	EP 2002-251056	20020215
EP 1233024	A3	20020918		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2002132301	A1	20020919	US 2002-74547	20020212

PRIORITY APPLN. INFO.: US 2001-269072P P 20010215

AB The invention provides cDNA and protein sequences of human protein. The protein 25466 shares sequence homol. to monocarboxylate (MCT) transporters, and in particular to **SLC16** family members. The invention also provides antisense nucleic acid mols., recombinant expression vectors containing 25466 gene., host cells into which the expression vectors have been introduced, and nonhuman transgenic animals in which a 25466 gene has been introduced or disrupted. The invention still further provides isolated 25466 proteins, fusion proteins, antigenic peptides and anti-25466 antibodies. Diagnostic and therapeutic methods utilizing compns. of the invention are also provided.

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=> d his

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     FILE 'MEDLINE, CAPLUS, BIOSIS, SCISEARCH' ENTERED AT 14:07:00 ON 04 MAR
     2004
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L2             8 S SLC16
L3             5 DUP REM L2 (3 DUPLICATES REMOVED)

=> s l1(s)(family or superfamily)
L4           113 L1(S)(FAMILY OR SUPERFAMILY)

=> dup rem l4
PROCESSING COMPLETED FOR L4
L5            40 DUP REM L4 (73 DUPLICATES REMOVED)

=> s mct4 or mct?4
'?' TRUNCATION SYMBOL NOT VALID WITHIN 'MCT?4'
The truncation symbol ?  may be used only at the end of a search
term.  To specify a variable character within a word use '!', e.g.,
'wom!n' to search for both 'woman' and 'women'.  Enter "HELP
TRUNCATION" at an arrow prompt (=>) for more information.

=> s mct4 or mct!4
L6           214 MCT4 OR MCT!4

=> s l6 and l1
L7           190 L6 AND L1

=> dup rem l7
PROCESSING COMPLETED FOR L7
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L8 67 DUP REM L7 (123 DUPLICATES REMOVED)

=> s l5 and l8
L9 10 L5 AND L8

=> d his

(FILE 'HOME' ENTERED AT 14:04:47 ON 04 MAR 2004)

FILE 'MEDLINE, CAPLUS, BIOSIS, SCISEARCH' ENTERED AT 14:07:00 ON 04 MAR 2004
L1 997 S MONOCARBOXYLATE(W)TRANSPORTER?
L2 8 S SLC16
L3 5 DUP REM L2 (3 DUPLICATES REMOVED)
L4 113 S L1(S)(FAMILY OR SUPERFAMILY)
L5 40 DUP REM L4 (73 DUPLICATES REMOVED)
L6 214 S MCT4 OR MCT!4
L7 190 S L6 AND L1
L8 67 DUP REM L7 (123 DUPLICATES REMOVED)
L9 10 S L5 AND L8

=> d ibib abs 1-10

L9 ANSWER 1 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2004068746 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12739169
TITLE: The SLC16 gene **family**-from **monocarboxylate transporters** (MCTs) to aromatic amino acid transporters and beyond.
AUTHOR: Halestrap Andrew P; Meredith David
CORPORATE SOURCE: Department of Biochemistry, University of Bristol, BS8 1TD, Bristol, UK,. A.Halestrap@Bristol.ac.uk
SOURCE: Pflugers Archiv : European journal of physiology, (2004 Feb) 447 (5) 619-28.
Journal code: 0154720. ISSN: 0031-6768.
PUB. COUNTRY: Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-DATA-REVIEW; IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20040211
Last Updated on STN: 20040211
AB The monocarboxylate cotransporter (MCT) family now comprises 14 members, of which only the first four (MCT1-**MCT4**) have been demonstrated experimentally to catalyse the proton-linked transport of metabolically important monocarboxylates such as lactate, pyruvate and ketone bodies. SLC16A10 (T-type amino-acid transporter-1, TAT1) is an aromatic amino acid transporter whilst the other members await characterization. MCTs have 12 transmembrane domains (TMDs) with intracellular N- and C-termini and a large intracellular loop between TMDs 6 and 7. MCT1 and **MCT4** require a monotopic ancillary protein, CD147, for expression of functional protein at the plasma membrane. Lactic acid transport across the plasma membrane is fundamental for the metabolism of and pH regulation of all cells, removing lactic acid produced by glycolysis and allowing uptake by those cells utilizing it for gluconeogenesis (liver and kidney) or as a respiratory fuel (heart and red muscle). The properties of the different MCT isoforms and their tissue distribution and regulation reflect these roles.

L9 ANSWER 2 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2003351262 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12884241

TITLE: Molecular features, regulation, and function of **monocarboxylate transporters**: implications for drug delivery.
AUTHOR: Enerson Bradley E; Drewes Lester R
CORPORATE SOURCE: School of Medicine Duluth, Biochemistry and Molecular Biology, 10 University Drive, Duluth, Minnesota 55812, USA.
SOURCE: Journal of pharmaceutical sciences, (2003 Aug) 92 (8) 1531-44.
Journal code: 2985195R. ISSN: 0022-3549.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20030729
Last Updated on STN: 20031218

AB The diffusion of monocarboxylates such as lactate and pyruvate across the plasma membrane of mammalian cells is facilitated by a **family** of integral membrane transport proteins, the **monocarboxylate transporters** (MCTs). Currently, at least eight unique members of the MCT family have been discovered and orthologs to each have been identified in a variety of species. Four MCTs (MCT1-**MCT4**) have been functionally characterized. Each isoform possesses unique biochemical properties such as kinetic constants and sensitivity to known MCT inhibitors. Several fold changes in the expression of MCTs may be evoked by altered physiological conditions, yet the molecular mechanisms underlying the regulation of MCTs are poorly understood. Post-translational regulation of MCT1 and **MCT4** occurs, in part, by interaction with CD147, an accessory protein that is necessary for trafficking, localization, and functional expression of these transporters. Because of the physiological importance of monocarboxylates to the overall maintenance of metabolic homeostasis, the function of MCTs is significant to several pathologies that occur with disease, such as ischemic stroke and cancer. Finally, the expression of MCT1 in the epithelium of the small intestine and colon and in the blood-brain barrier may provide routes for the intestinal and blood to brain transfer of carboxylated pharmaceutical agents and other exogenous monocarboxylates.

L9 ANSWER 3 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2002486536 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12297728
TITLE: Functional and molecular characterisation of lactic acid transport in bovine articular chondrocytes.
AUTHOR: Meredith David; Bell Peter; McClure Brendan; Wilkins Robert
CORPORATE SOURCE: Department of Human Anatomy and Genetics, University of Oxford, Great Britain.. david.meredith@anat.ox.ac.uk
SOURCE: Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology, (2002) 12 (4) 227-34.
Journal code: 9113221. ISSN: 1015-8987.
PUB. COUNTRY: Switzerland
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200303
ENTRY DATE: Entered STN: 20020926
Last Updated on STN: 20030331
Entered Medline: 20030328

AB Chondrocytes, which control the turnover of cartilage, undergo predominantly glycolytic metabolism due to the avascular nature of the tissue. This will result in high levels of lactic acid production, and

this lactic acid must leave the cells for their normal intracellular pH to be maintained. However to date the mechanism by which lactic acid is removed from the chondrocytes has not been elucidated. In the present study lactic acid transport has been characterised using the intracellular pH-sensitive fluorimetric dye BCECF to measure intracellular pH (pH(i)). Addition of extracellular lactic acid-induced an acidification which was sensitive to alpha-cyano-4-hydroxycinnamate (alpha-CHC) and phloretin indicating the involvement of isoform(s) of the **monocarboxylate transporter** (MCT) **family.** The results studies of transport kinetics were consistent with the **MCT4** isoform (K(m) 14.1mM), common to other glycolytic cells. Western blotting confirmed that **MCT4** was the predominantly expressed isoform, although both MCT1 and **MCT4** transcripts were present when cells were assayed by RT-PCR. Through effects on pH(i), the activity of this transporter may therefore modify cartilage turnover.

L9 ANSWER 4 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2002314936 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12056458
TITLE: Genetic expression of **monocarboxylate transporters** during human and murine oocyte maturation and early embryonic development.
AUTHOR: Herubel Francois; El Mouatassim Said; Guerin Pierre; Frydman Rene; Menezo Yves
CORPORATE SOURCE: Laboratoire Marcel Merieux, Lyon, France.
SOURCE: Zygote (Cambridge, England), (2002 May) 10 (2) 175-81. Journal code: 9309124. ISSN: 0967-1994.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200303
ENTRY DATE: Entered STN: 20020612
Last Updated on STN: 20030304
Entered Medline: 20030303

AB During the early preimplantationes of human embryos, pyruvate and lactate, but not glucose, are the preferred energy substrates. Transport of these monocarboxylates is mediated, in mammalian cells, by a **family** of transporters, designated as **monocarboxylate transporters** (MCTs). Human and mouse genetic expression of MCT members 1, 2, 3, 4 and basigin, a chaperone protein of MCT1 and **MCT4**, was qualitatively analysed using the reverse transcription nested polymerase chain reaction (RT-nested PCR) in immature oocytes (germinal vesicle stage; GV), in non-fertilised metaphase II (MII) oocytes and in embryos from 2-cell stage to blastocysts. Transcripts encoding for MCT1 and MCT2 were present, under a polyadenylated form, in the majority of the human and mouse oocytes and early embryos. MCT3 transcripts were not detected in either human or mouse. **MCT4** mRNA was not detected in human oocytes and embryos, but was present in mouse oocytes and embryos. This fact could imply differences in lactate transport and regulation of intracellular pH between human and murine early embryos. Basigin transcripts were present in mouse and human MII oocytes and preimplantation embryos, but were not detected at GV stage. However, using 3' end-specific primers in the RT reaction instead of Oligo(dT)12-18 primers, transcripts encoding for this protein were then detected at GV stage in both species. This result suggests that a regulated polyadenylation process occurs during oocyte maturation for these transcripts. Thus, basigin mRNA can be considered as a marker of oocyte cytoplasmic maturation in human and mouse species.

L9 ANSWER 5 OF 10 MEDLINE on STN

ACCESSION NUMBER: 2001171839 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11272148
TITLE: Expression and distribution of lactate/ **monocarboxylate transporter** isoforms in pancreatic islets and the exocrine pancreas.
AUTHOR: Zhao C; Wilson M C; Schuit F; Halestrap A P; Rutter G A
CORPORATE SOURCE: Department of Biochemistry, School of Medical Sciences, University of Bristol, UK.
SOURCE: Diabetes, (2001 Feb) 50 (2) 361-6. Journal code: 0372763. ISSN: 0012-1797.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 200103
ENTRY DATE: Entered STN: 20010404
Last Updated on STN: 20010404
Entered Medline: 20010329

AB Transport of lactate across the plasma membrane of pancreatic islet beta-cells is slow, as described by Sekine et al. (J Biol Chem 269:4895-4902, 1994), which is a feature that may be important for normal nutrient-induced insulin secretion. Although eight members of the **monocarboxylate transporter** (MCT) **family** have now been identified, the expression of these isoforms within the exocrine and endocrine pancreas has not been explored in detail. Using immunocytochemical analysis of pancreatic sections fixed in situ, we demonstrated three phenomena. First, immunoreactivity of the commonly expressed lactate transporter isoform MCT1 is near zero in both alpha- and beta-cells but is abundant in the pancreatic acinar cell plasma membrane. No MCT2 or **MCT4** was detected in any pancreatic cell type. Second, Western analysis of purified beta- and non-beta-cell membranes revealed undetectable levels of MCT1 and **MCT4.** In derived beta-cell lines, MCT1 was absent from MIN6 cells and present in low amounts in INS-1 cell membranes and at high levels in RINm5F cells. **MCT4** was weakly expressed in MIN6 beta-cells. Third, CD147, an MCT-associated chaperone protein, which is closely colocalized with MCT1 on acinar cell membranes, was absent from islet cell membranes. CD147 was also largely absent from MIN6 and INS-1 cells but abundant in RINm5F cells. Low expression of MCT1, MCT2, and **MCT4** contributes to the enzymatic configuration of beta-cells, which is poised to ensure glucose oxidation and the generation of metabolic signals and may also be important for glucose sensing in islet non-beta-cells. MCT overexpression throughout the islet could contribute to deranged hormone secretion in some forms of type 2 diabetes.

L9 ANSWER 6 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2001080520 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10926847
TITLE: The low-affinity **monocarboxylate transporter MCT4** is adapted to the export of lactate in highly glycolytic cells.
AUTHOR: Dimmer K S; Friedrich B; Lang F; Deitmer J W; Broer S
CORPORATE SOURCE: Physiologisches Institut der Universitat, Gmelinstr. 5, D-72076 Tubingen, Germany.
SOURCE: Biochemical journal, (2000 Aug 15) 350 Pt 1 219-27. Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200101

ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20010111

AB Transport of lactate and other monocarboxylates in mammalian cells is mediated by a **family** of transporters, designated **monocarboxylate transporters** (MCTs). The **MCT4** member of this family has recently been identified as the major isoform of white muscle cells, mediating lactate efflux out of glycolytically active myocytes [Wilson, Jackson, Heddle, Price, Pilegaard, Juel, Bonen, Montgomery, Hutter and Halestrap (1998) J. Biol. Chemical 273, 15920-15926]. To analyse the functional properties of this transporter, rat **MCT4** was expressed in Xenopus laevis oocytes and transport activity was monitored by flux measurements with radioactive tracers and by changes of the cytosolic pH using pH-sensitive microelectrodes. Similar to other members of this family, monocarboxylate transport via **MCT4** is accompanied by the transport of H(+) across the plasma membrane. Uptake of lactate strongly increased with decreasing extracellular pH, which resulted from a concomitant drop in the K(m) value. **MCT4** could be distinguished from the other isoforms mainly in two respects. First, **MCT4** is a low-affinity MCT: for L-lactate K(m) values of 17+/-3 mM (pH-electrode) and 34+/-5 mM (flux measurements with L-[U-(14)C]lactate) were determined. Secondly, lactate is the preferred substrate of **MCT4.** K(m) values of other monocarboxylates were either similar to the K(m) value for lactate (pyruvate, 2-oxoisohexanoate, 2-oxoisopentanoate, acetoacetate) or displayed much lower affinity for the transporter (beta-hydroxybutyrate and short-chain fatty acids). Under physiological conditions, rat MCT will therefore preferentially transport lactate. Monocarboxylate transport via **MCT4** could be competitively inhibited by alpha-cyano-4-hydroxycinnamate, phloretin and partly by 4, 4'-di-isothiocyanostilbene-2,2'-disulphonic acid. Similar to MCT1, monocarboxylate transport via **MCT4** was sensitive to inhibition by the thiol reagent p-chloromercuribenzoesulphonic acid.

L9 ANSWER 7 OF 10 MEDLINE on STN
ACCESSION NUMBER: 2001020647 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11005765
TITLE: Mechanism(s) of butyrate transport in Caco-2 cells: role of **monocarboxylate transporter** 1.
AUTHOR: Hadjiagapiou C; Schmidt L; Dudeja P K; Layden T J; Ramaswamy K
CORPORATE SOURCE: Section of Digestive and Liver Diseases, Department of Medicine, University of Illinois at Chicago and the West Side Veterans Affairs Medical Center, Chicago, Illinois 60612, USA.
CONTRACT NUMBER: DK-33349 (NIDDK)
DK-54016 (NIDDK)
SOURCE: American journal of physiology. Gastrointestinal and liver physiology, (2000 Oct) 279 (4) G775-80.
Journal code: 100901227. ISSN: 0193-1857.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200011
ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20030319
Entered Medline: 20001106

AB The short-chain fatty acid butyrate was readily taken up by Caco-2 cells. Transport exhibited saturation kinetics, was enhanced by low extracellular pH, and was Na(+) independent. Butyrate uptake was unaffected by DIDS;

however, alpha-cyano-4-hydroxycinnamate and the butyrate analogs propionate and L-lactate significantly inhibited uptake. These results suggest that butyrate transport by Caco-2 cells is mediated by a transporter belonging to the **monocarboxylate transporter family.** We identified five isoforms of this transporter, MCT1, MCT3, **MCT4**, MCT5, and MCT6, in Caco-2 cells by PCR, and MCT1 was found to be the most abundant isoform by RNase protection assay. Transient transfection of MCT1, in the antisense orientation, resulted in significant inhibition of butyrate uptake. The cells fully recovered from this inhibition by 5 days after transfection. In conclusion, our data showed that the MCT1 transporter may play a major role in the transport of butyrate into Caco-2 cells.

L9 ANSWER 8 OF 10 MEDLINE on STN
ACCESSION NUMBER: 1999441227 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10510291
TITLE: The proton-linked **monocarboxylate transporter** (MCT) **family**: structure, function and regulation.
AUTHOR: Halestrap A P; Price N T
CORPORATE SOURCE: Department of Biochemistry, School of Medical Sciences, University of Bristol, Bristol BS8 1TD, U.K.. A.Halestrap@Bristol.ac.uk
SOURCE: Biochemical journal, (1999 Oct 15) 343 Pt 2 281-99. Ref: 170
Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, ACADEMIC)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199912
ENTRY DATE: Entered STN: 20000113
Last Updated on STN: 20000113
Entered Medline: 19991221

AB Monocarboxylates such as lactate and pyruvate play a central role in cellular metabolism and metabolic communication between tissues. Essential to these roles is their rapid transport across the plasma membrane, which is catalysed by a recently identified **family** of proton-linked **monocarboxylate transporters** (MCTs). Nine MCT-related sequences have so far been identified in mammals, each having a different tissue distribution, whereas six related proteins can be recognized in Caenorhabditis elegans and 4 in Saccharomyces cerevisiae. Direct demonstration of proton-linked lactate and pyruvate transport has been demonstrated for mammalian MCT1-**MCT4**, but only for MCT1 and MCT2 have detailed analyses of substrate and inhibitor kinetics been described following heterologous expression in Xenopus oocytes. MCT1 is ubiquitously expressed, but is especially prominent in heart and red muscle, where it is up-regulated in response to increased work, suggesting a special role in lactic acid oxidation. By contrast, **MCT4** is most evident in white muscle and other cells with a high glycolytic rate, such as tumour cells and white blood cells, suggesting it is expressed where lactic acid efflux predominates. MCT2 has a ten-fold higher affinity for substrates than MCT1 and **MCT4** and is found in cells where rapid uptake at low substrate concentrations may be required, including the proximal kidney tubules, neurons and sperm tails. MCT3 is uniquely expressed in the retinal pigment epithelium. The mechanisms involved in regulating the expression of different MCT isoforms remain to be established. However, there is evidence for alternative splicing of the 5'- and 3'-untranslated regions and the use of alternative promoters

for some isoforms. In addition, MCT1 and **MCT4** have been shown to interact specifically with OX-47 (CD147), a member of the immunoglobulin superfamily with a single transmembrane helix. This interaction appears to assist MCT expression at the cell surface. There is still much work to be done to characterize the properties of the different isoforms and their regulation, which may have wide-ranging implications for health and disease. In the future it will be interesting to explore the linkage of genetic diseases to particular MCTs through their chromosomal location.

L9 ANSWER 9 OF 10 MEDLINE on STN
ACCESSION NUMBER: 1998087501 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9425115
TITLE: Cloning and sequencing of four new mammalian **monocarboxylate transporter** (MCT) homologues confirms the existence of a transporter **family** with an ancient past.
AUTHOR: Price N T; Jackson V N; Halestrap A P
CORPORATE SOURCE: Department of Biochemistry, School of Medical Sciences, University of Bristol, Bristol BS8 1TD, U.K.
SOURCE: Biochemical journal, (1998 Jan 15) 329 (Pt 2) 321-8. Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-U59299; GENBANK-U79745; GENBANK-U81800
ENTRY MONTH: 199802
ENTRY DATE: Entered STN: 19980306
Last Updated on STN: 20000303
Entered Medline: 19980220

AB Measurement of monocarboxylate transport kinetics in a range of cell types has provided strong circumstantial evidence for a **family** of **monocarboxylate transporters** (MCTs). Two mammalian MCT isoforms (MCT1 and MCT2) and a chicken isoform (REMP or MCT3) have already been cloned, sequenced and expressed, and another MCT-like sequence (XPCT) has been identified. Here we report the identification of new human MCT homologues in the database of expression sequence tags and the cloning and sequencing of four new full-length MCT-like sequences from human cDNA libraries, which we have denoted MCT3, **MCT4**, MCT5 and MCT6. Northern blotting revealed a unique tissue distribution for the expression of mRNA for each of the seven putative MCT isoforms (MCT1-MCT6 and XPCT). All sequences were predicted to have 12 transmembrane (TM) helical domains with a large intracellular loop between TM6 and TM7. Multiple sequence alignments showed identities ranging from 20% to 55%, with the greatest conservation in the predicted TM regions and more variation in the C-terminal than the N-terminal region. Searching of additional sequence databases identified candidate MCT homologues from the yeast Saccharomyces cerevisiae, the nematode worm Caenorhabditis elegans and the archaebacterium Sulfolobus solfataricus. Together these sequences constitute a new family of transporters with some strongly conserved sequence motifs, the possible functions of which are discussed.

L9 ANSWER 10 OF 10 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 2003:154598 BIOSIS
DOCUMENT NUMBER: PREV200300154598
TITLE: Expression and Polarity of **Monocarboxylate Transporters** in Human Retinal Pigment Epithelium.
AUTHOR(S): Philp, N. J. [Reprint Author]; Yoon, H. [Reprint Author]; Wang, D. [Reprint Author]
CORPORATE SOURCE: Pathology, Anatomy and Cell Biology, Thomas Jefferson

University, Philadelphia, PA, USA
SOURCE: ARVO Annual Meeting Abstract Search and Program Planner, (2002) Vol. 2002, pp. Abstract No. 2428. cd-rom. Meeting Info.: Annual Meeting of the Association For Research in Vision and Ophthalmology. Fort Lauderdale, Florida, USA. May 05-10, 2002.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Mar 2003
Last Updated on STN: 26 Mar 2003

AB Purpose: To identify the **monocarboxylate transporters** (MCTs)expressed in human retinal pigment epithelium (RPE) in situ and in ARPE-19 cells. Methods: MCT expression in human RPE and ARPE-19 cells was determined using reverse transcription-polymerase chain reaction (RT-PCR) with isoform specific primers. Immunohistochemical localization of MCTs in human donor eyes and ARPE-19 cells was performed using isoform specific peptide antibodies. Specificity of antibodies was determined by Western blot analysis. Results: MCT1 and MCT3 were amplified by RT-PCR from RPE-choroid complex and differentiated ARPE-19 cells. While most cells express MCT1, we previously showed in mouse that MCT3 is preferentially expressed by the RPE. Immunofluorescence microscopy of adult human donor eye revealed a polarized distribution of MCTs in the RPE. MCT1 antibody labeled the apical membrane of the RPE while labeling with MCT3 antibodies was restricted to the basolateral surface. Similarly, immuno-labeling of sections through differentiated ARPE-19 cell cultures showed that MCT1 was polarized to the apical membrane. There was no detectable MCT3 labeling in ARPE-19 cells even though the transcript was expressed. ARPE-19 cells expressed **MCT4**, a MCT isoform closely related to MCT3. Immunohistochemical labeling of ARPE-19 cells with antibodies specific for **MCT4** demonstrated selective labeling of the basolateral membrane. While the RPE cells express two MCT isoforms, only one glucose transporter is expressed, GLUT1. GLUT1 antibody labeled the apical and basolateral membranes of human RPE and ARPE-19 cells. Conclusion: **Monocarboxylate transporters** (MCTs) are a **family** of highly homologous membrane proteins that mediate the 1:1 transport of a proton and a lactate ion. Lactate is both an end product and a substrate of energy metabolism in the retina. The expression two distinct MCT isoforms in RPE is consistent with a role for the RPE in regulating lactate levels in the outer retina. The coordinated activities of MCT1 in the apical membrane and MCT3 in the basolateral membrane could control transepithelial movement of lactate.

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=> d his

     (FILE 'HOME' ENTERED AT 14:04:47 ON 04 MAR 2004)

     FILE 'MEDLINE, CAPLUS, BIOSIS, SCISEARCH' ENTERED AT 14:07:00 ON 04 MAR
     2004
L1          997 S MONOCARBOXYLATE(W)TRANSPORTER?
L2            8 S SLC16
L3            5 DUP REM L2 (3 DUPLICATES REMOVED)
L4          113 S L1(S)(FAMILY OR SUPERFAMILY)
L5           40 DUP REM L4 (73 DUPLICATES REMOVED)
L6          214 S MCT4 OR MCT!4
L7          190 S L6 AND L1
L8           67 DUP REM L7 (123 DUPLICATES REMOVED)
L9           10 S L5 AND L8

=> s l5 and (function? or activit?)
```

L10 19 L5 AND (FUNCTION? OR ACTIVIT?)

=> d ibib abs 1-19

L10 ANSWER 1 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2004068746 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12739169
TITLE: The SLC16 gene **family**-from **monocarboxylate transporters** (MCTs) to aromatic amino acid transporters and beyond.
AUTHOR: Halestrap Andrew P; Meredith David
CORPORATE SOURCE: Department of Biochemistry, University of Bristol, BS8 1TD, Bristol, UK,. A.Halestrap@Bristol.ac.uk
SOURCE: Pflugers Archiv : European journal of physiology, (2004 Feb) 447 (5) 619-28.
Journal code: 0154720. ISSN: 0031-6768.
PUB. COUNTRY: Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-DATA-REVIEW; IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20040211
Last Updated on STN: 20040211
AB The monocarboxylate cotransporter (MCT) family now comprises 14 members, of which only the first four (MCT1-MCT4) have been demonstrated experimentally to catalyse the proton-linked transport of metabolically important monocarboxylates such as lactate, pyruvate and ketone bodies. SLC16A10 (T-type amino-acid transporter-1, TAT1) is an aromatic amino acid transporter whilst the other members await characterization. MCTs have 12 transmembrane domains (TMDs) with intracellular N- and C-termini and a large intracellular loop between TMDs 6 and 7. MCT1 and MCT4 require a monotopic ancillary protein, CD147, for expression of **functional** protein at the plasma membrane. Lactic acid transport across the plasma membrane is fundamental for the metabolism of and pH regulation of all cells, removing lactic acid produced by glycolysis and allowing uptake by those cells utilizing it for gluconeogenesis (liver and kidney) or as a respiratory fuel (heart and red muscle). The properties of the different MCT isoforms and their tissue distribution and regulation reflect these roles.

L10 ANSWER 2 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2003548466 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12946269
TITLE: The loop between helix 4 and helix 5 in the monocarboxylate transporter MCT1 is important for substrate selection and protein stability.
AUTHOR: Galic Sandra; Schneider Hans-Peter; Broer Angelika; Deitmer Joachim W; Broer Stefan
CORPORATE SOURCE: School of Biochemistry & Molecular Biology, Australian National University, Canberra ACT 0200, Australia.
SOURCE: Biochemical journal, (2003 Dec 1) 376 (Pt 2) 413-22.
Journal code: 2984726R. ISSN: 1470-8728.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200312
ENTRY DATE: Entered STN: 20031121
Last Updated on STN: 20031219
Entered Medline: 20031202
AB Transport of lactate, pyruvate and the ketone bodies acetoacetate and beta-hydroxybutyrate, is mediated in most mammalian cells by members of

the **monocarboxylate transporter family** (SLC16). A conserved signature sequence has been identified in this family, which is located in the loop between helix 4 and helix 5 and extends into helix 5. We have mutated residues in this signature sequence in the rat monocarboxylate transporter (MCT1) to elucidate the significance of this region for monocarboxylate transport. Mutation of R143 and G153 resulted in complete inactivation of the transporter. For the MCT1(G153V) mutant this was explained by a failure to reach the plasma membrane. The lack of transport **activity** of MCT1(R143Q) could be partially rescued by the conservative exchange R143H. The resulting mutant transporter displayed reduced stability, a decreased V (max) of lactate transport but not of acetate transport, and an increased stereoselectivity. Mutation of K137, K141 and K142 indicated that only K142 played a significant role in the transport mechanism. Mutation of K142 to glutamine resulted in an increase of the K (m) for lactate from 5 mM to 12 mM. In contrast with MCT1(R143H), MCT1(K142Q) was less stereoselective than the wild-type. A mechanism is proposed that includes all critical residues.

L10 ANSWER 3 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2003508963 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14585264
TITLE: Cellular pH regulators: potentially promising molecular targets for cancer chemotherapy.
AUTHOR: Izumi Hiroto; Torigoe Takayuki; Ishiguchi Hiroshi; Uramoto Hidetaka; Yoshida Yoichiro; Tanabe Mizuho; Ise Tomoko; Murakami Tadashi; Yoshida Takeshi; Nomoto Minoru; Kohno Kimitoshi
CORPORATE SOURCE: Department of Molecular Biology, University of Occupational and Environmental Health, School of medicine, Fukuoka 807-8555, Japan.
SOURCE: Cancer treatment reviews, (2003 Dec) 29 (6) 541-9. Ref: 62 Journal code: 7502030. ISSN: 0305-7372.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200311
ENTRY DATE: Entered STN: 20031031
Last Updated on STN: 20031219
Entered Medline: 20031126

AB One of the major obstacles to the successful treatment of cancer is the complex biology of solid tumour development. Although regulation of intracellular pH has been shown to be critically important for many cellular **functions**, pH regulation has not been fully investigated in the field of cancer. It has, however, been shown that cellular pH is crucial for biological **functions** such as cell proliferation, invasion and metastasis, drug resistance and apoptosis. Hypoxic conditions are often observed during the development of solid tumours and lead to intracellular and extracellular acidosis. Cellular acidosis has been shown to be a trigger in the early phase of apoptosis and leads to activation of endonucleases inducing DNA fragmentation. To avoid intracellular acidification under such conditions, pH regulators are thought to be up-regulated in tumour cells. Four major types of pH regulator have been identified: the proton pump, the sodium-proton exchanger **family** (NHE), the bicarbonate transporter **family** (BCT) and the **monocarboxylate transporter family** (MCT). Here, we describe the structure and **function** of pH regulators expressed in tumour tissue.

Understanding pH regulation in tumour cells may provide new ways of inducing tumour-specific apoptosis, thus aiding cancer chemotherapy.

L10 ANSWER 4 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2003479872 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12969152
TITLE: Regulation of cytosolic pH and lactic acid release in mesangial cells overexpressing GLUT1.
AUTHOR: Lang Karl S; Mueller Matthias M; Tanneur Valerie; Wallisch Sabine; Fedorenko Olga; Palmada Monica; Lang Florian; Broer Stefan; Heilig Charles W; Schleicher Erwin; Weigert Cora
CORPORATE SOURCE: Department of Physiology, University of Tubingen, Tubingen, Germany.
SOURCE: Kidney international, (2003 Oct) 64 (4) 1338-47.
Journal code: 0323470. ISSN: 0085-2538.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20031016
Last Updated on STN: 20031219

AB BACKGROUND: Anaerobic glycolysis leads to the formation of lactate and H+ and thus imposes a significant challenge on cytosolic acid/base regulation. Cytosolic acidification, on the other hand, is known to inhibit flux through glycolysis and lactate formation. To explore the interplay of cytosolic pH and glycolysis, rat mesangial cells transfected with the glucose transporter GLUT1 (GLUT1 cells) were compared with those transfected with beta-galactosidase (LacZ cells). METHODS: In the presence of extracellular glucose, the glycolytic rate was one order of magnitude higher in GLUT1 cells than in LacZ cells. Cytosolic pH (pHi) was significantly higher in GLUT1 than LacZ cells, an effect abolished in the presence of Na+/H+ exchange inhibitor ethylisopropylamiloride (1 micromol/L). RESULTS: Addition of 40 mmol/L lactate led to marked cytosolic acidification, which was in both cell types blunted by O-methyl-glucose (20 mmol/L) and completely abolished by 100 micromol/L phloretin and 1 mmol/L p-chloromercuribenzene-sulphonic acid (p-CMBS) and in LacZ cells only by glucose (20 mmol/L). The **functional** characterization points to the involvement of a lactic acid transporter from the **monocarboxylate transporter** (MCT) **family**, particularly MCT1. Reverse transcription-polymerase chain reaction (RT-PCR) indeed disclosed the expression of MCT1 and MCT2 in both GLUT1 and LacZ cells. CONCLUSION: Overexpression of GLUT1 leads to cytosolic alkalinization of mesangial cells depending on **functional** Na+/H+ exchanger but not on Na+ independent H+ transport.

L10 ANSWER 5 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2003351262 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12884241
TITLE: Molecular features, regulation, and **function** of monocarboxylate transporters: implications for drug delivery.
AUTHOR: Enerson Bradley E; Drewes Lester R
CORPORATE SOURCE: School of Medicine Duluth, Biochemistry and Molecular Biology, 10 University Drive, Duluth, Minnesota 55812, USA.
SOURCE: Journal of pharmaceutical sciences, (2003 Aug) 92 (8) 1531-44.
Journal code: 2985195R. ISSN: 0022-3549.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20030729
Last Updated on STN: 20031218

AB The diffusion of monocarboxylates such as lactate and pyruvate across the plasma membrane of mammalian cells is facilitated by a **family** of integral membrane transport proteins, the **monocarboxylate transporters** (MCTs). Currently, at least eight unique members of the MCT family have been discovered and orthologs to each have been identified in a variety of species. Four MCTs (MCT1-MCT4) have been **functionally** characterized. Each isoform possesses unique biochemical properties such as kinetic constants and sensitivity to known MCT inhibitors. Several fold changes in the expression of MCTs may be evoked by altered physiological conditions, yet the molecular mechanisms underlying the regulation of MCTs are poorly understood. Post-translational regulation of MCT1 and MCT4 occurs, in part, by interaction with CD147, an accessory protein that is necessary for trafficking, localization, and **functional** expression of these transporters. Because of the physiological importance of monocarboxylates to the overall maintenance of metabolic homeostasis, the **function** of MCTs is significant to several pathologies that occur with disease, such as ischemic stroke and cancer. Finally, the expression of MCT1 in the epithelium of the small intestine and colon and in the blood-brain barrier may provide routes for the intestinal and blood to brain transfer of carboxylated pharmaceutical agents and other exogenous monocarboxylates.

L10 ANSWER 6 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2003338272 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 12870677
TITLE: A 44-kDa of protein identical to the N-terminal amino acid sequence of MCT1 in human circulation.
AUTHOR: Iizuka Kenji; Morita Noriteru; Nagai Tatsuya; Hanada Akiko; Okita Koichi; Yonezawa Kazuya; Murakami Takeshi; Kitabatake Akira; Kawaguchi Hideaki
CORPORATE SOURCE: Department of Laboratory Medicine, Hokkaido University Graduate School of Medicine, Sapporo, Japan.. kiizuka@med.hokudai.ac.jp
SOURCE: Molecular and cellular biochemistry, (2003 Jun) 248 (1-2) 217-23.
Journal code: 0364456. ISSN: 0300-8177.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 20030722
Last Updated on STN: 20031218

AB A **family** of specific carrier protein designated as **monocarboxylate transporter** (MCT) has been known to transport the lactate and other moncarboxylates in mammalian cells. We hypothesized the presence of serum protein in human circulation that may works as a lactate carrier and that biochemical structure would possesses common structure with MCT on the plasma membrane. Immunoblot analysis with an anti-MCT1 polyclonal antibody suggested the presence of a 44-kDa protein in human circulation and N-terminal amino acid sequencing exhibited a stretch of 14 amino acids which is completely identical to MCT1. The unbound fractions from the GST-MCTI fusion protein-immobilized glutathione sepharose 4B column demonstrated that lactic acid concentration began to increase with one fraction delay compared to Sepharose 4B and GST-immobilized column. When lactic acid was washed away with PBS, lactic acid concentrations in the effuluent constantly decreased

in both Sepharose 4B and GST-immobilized column. However, GST-MCT1-immobilized column showed specific convex curve from fraction approximately 3 mM of lactate and demonstrated wash out delay compared to Sepharose 4B and GST-immobilized column. These observations demonstrated biochemical and immunological similarities between a 44-kDa protein purified from human serum and MCT1 present on the plasma membrane. The studies on MCT1-fusion protein suggested possible **functional** properties of a 44-kDa protein as a lactate buffer by holding and unhand a lactate according to the lactate concentration in human blood. The experiments described herein have suggested the existence of lactate carrier in human circulation which is free from plasma membrane.

L10 ANSWER 7 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2002486536 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12297728
TITLE: **Functional** and molecular characterisation of lactic acid transport in bovine articular chondrocytes.
AUTHOR: Meredith David; Bell Peter; McClure Brendan; Wilkins Robert
CORPORATE SOURCE: Department of Human Anatomy and Genetics, University of Oxford, Great Britain.. david.meredith@anat.ox.ac.uk
SOURCE: Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology, (2002) 12 (4) 227-34.
Journal code: 9113221. ISSN: 1015-8987.
PUB. COUNTRY: Switzerland
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200303
ENTRY DATE: Entered STN: 20020926
Last Updated on STN: 20030331
Entered Medline: 20030328

AB Chondrocytes, which control the turnover of cartilage, undergo predominantly glycolytic metabolism due to the avascular nature of the tissue. This will result in high levels of lactic acid production, and this lactic acid must leave the cells for their normal intracellular pH to be maintained. However to date the mechanism by which lactic acid is removed from the chondrocytes has not been elucidated. In the present study lactic acid transport has been characterised using the intracellular pH-sensitive fluorimetric dye BCECF to measure intracellular pH (pH(i)). Addition of extracellular lactic acid-induced an acidification which was sensitive to alpha-cyano-4-hydroxycinnamate (alpha-CHC) and phloretin indicating the involvement of isoform(s) of the **monocarboxylate transporter** (MCT) **family.** The results studies of transport kinetics were consistent with the MCT4 isoform (K(m) 14.1mM), common to other glycolytic cells. Western blotting confirmed that MCT4 was the predominantly expressed isoform, although both MCT1 and MCT4 transcripts were present when cells were assayed by RT-PCR. Through effects on pH(i), the **activity** of this transporter may therefore modify cartilage turnover.

L10 ANSWER 8 OF 19 MEDLINE on STN
ACCESSION NUMBER: 2001080520 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10926847
TITLE: The low-affinity monocarboxylate transporter MCT4 is adapted to the export of lactate in highly glycolytic cells.
AUTHOR: Dimmer K S; Friedrich B; Lang F; Deitmer J W; Broer S
CORPORATE SOURCE: Physiologisches Institut der Universitat, Gmelinstr. 5, D-72076 Tubingen, Germany.

SOURCE: Biochemical journal, (2000 Aug 15) 350 Pt 1 219-27.
Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200101
ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20010111

AB Transport of lactate and other monocarboxylates in mammalian cells is mediated by a **family** of transporters, designated **monocarboxylate transporters** (MCTs). The MCT4 member of this family has recently been identified as the major isoform of white muscle cells, mediating lactate efflux out of glycolytically active myocytes [Wilson, Jackson, Heddle, Price, Pilegaard, Juel, Bonen, Montgomery, Hutter and Halestrap (1998) J. Biol. Chemical 273, 15920-15926]. To analyse the **functional** properties of this transporter, rat MCT4 was expressed in Xenopus laevis oocytes and transport **activity** was monitored by flux measurements with radioactive tracers and by changes of the cytosolic pH using pH-sensitive microelectrodes. Similar to other members of this family, monocarboxylate transport via MCT4 is accompanied by the transport of H(+) across the plasma membrane. Uptake of lactate strongly increased with decreasing extracellular pH, which resulted from a concomitant drop in the K(m) value. MCT4 could be distinguished from the other isoforms mainly in two respects. First, MCT4 is a low-affinity MCT: for L-lactate K(m) values of 17+/-3 mM (pH-electrode) and 34+/-5 mM (flux measurements with L-[U-(14)C]lactate) were determined. Secondly, lactate is the preferred substrate of MCT4. K(m) values of other monocarboxylates were either similar to the K(m) value for lactate (pyruvate, 2-oxoisohexanoate, 2-oxoisopentanoate, acetoacetate) or displayed much lower affinity for the transporter (beta-hydroxybutyrate and short-chain fatty acids). Under physiological conditions, rat MCT will therefore preferentially transport lactate. Monocarboxylate transport via MCT4 could be competitively inhibited by alpha-cyano-4-hydroxycinnamate, phloretin and partly by 4, 4'-di-isothiocyanostilbene-2,2'-disulphonic acid. Similar to MCT1, monocarboxylate transport via MCT4 was sensitive to inhibition by the thiol reagent p-chloromercuribenzoesulphonic acid.

L10 ANSWER 9 OF 19 MEDLINE on STN

ACCESSION NUMBER: 1999441227 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10510291

TITLE: The proton-linked **monocarboxylate transporter** (MCT) **family**: structure, **function** and regulation.

AUTHOR: Halestrap A P; Price N T
CORPORATE SOURCE: Department of Biochemistry, School of Medical Sciences, University of Bristol, Bristol BS8 1TD, U.K.. A.Halestrap@Bristol.ac.uk

SOURCE: Biochemical journal, (1999 Oct 15) 343 Pt 2 281-99. Ref: 170
Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, ACADEMIC)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199912
ENTRY DATE: Entered STN: 20000113

Last Updated on STN: 20000113
Entered Medline: 19991221

AB Monocarboxylates such as lactate and pyruvate play a central role in cellular metabolism and metabolic communication between tissues. Essential to these roles is their rapid transport across the plasma membrane, which is catalysed by a recently identified **family** of proton-linked **monocarboxylate transporters** (MCTs). Nine MCT-related sequences have so far been identified in mammals, each having a different tissue distribution, whereas six related proteins can be recognized in Caenorhabditis elegans and 4 in Saccharomyces cerevisiae. Direct demonstration of proton-linked lactate and pyruvate transport has been demonstrated for mammalian MCT1-MCT4, but only for MCT1 and MCT2 have detailed analyses of substrate and inhibitor kinetics been described following heterologous expression in Xenopus oocytes. MCT1 is ubiquitously expressed, but is especially prominent in heart and red muscle, where it is up-regulated in response to increased work, suggesting a special role in lactic acid oxidation. By contrast, MCT4 is most evident in white muscle and other cells with a high glycolytic rate, such as tumour cells and white blood cells, suggesting it is expressed where lactic acid efflux predominates. MCT2 has a ten-fold higher affinity for substrates than MCT1 and MCT4 and is found in cells where rapid uptake at low substrate concentrations may be required, including the proximal kidney tubules, neurons and sperm tails. MCT3 is uniquely expressed in the retinal pigment epithelium. The mechanisms involved in regulating the expression of different MCT isoforms remain to be established. However, there is evidence for alternative splicing of the 5'- and 3'-untranslated regions and the use of alternative promoters for some isoforms. In addition, MCT1 and MCT4 have been shown to interact specifically with OX-47 (CD147), a member of the immunoglobulin superfamily with a single transmembrane helix. This interaction appears to assist MCT expression at the cell surface. There is still much work to be done to characterize the properties of the different isoforms and their regulation, which may have wide-ranging implications for health and disease. In the future it will be interesting to explore the linkage of genetic diseases to particular MCTs through their chromosomal location.

L10 ANSWER 10 OF 19 MEDLINE on STN
ACCESSION NUMBER: 1998400885 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9725820
TITLE: Monocarboxylate transporter expression in mouse brain.
AUTHOR: Koehler-Stec E M; Simpson I A; Vannucci S J; Landschulz K T; Landschulz W H
CORPORATE SOURCE: Experimental Diabetes, Metabolism and Nutrition Section, Diabetes Branch, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland 20892, USA.
CONTRACT NUMBER: HD-31521 (NICHD)
SOURCE: American journal of physiology, (1998 Sep) 275 (3 Pt 1) E516-24.
Journal code: 0370511. ISSN: 0002-9513.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199810
ENTRY DATE: Entered STN: 19981020
Last Updated on STN: 19981020
Entered Medline: 19981005

AB Although glucose is the major metabolic fuel needed for normal brain **function**, monocarboxylic acids, i.e., lactate, pyruvate, and ketone bodies, can also be utilized by the brain as alternative energy

substrates. In most mammalian cells, these substrates are transported either into or out of the cell by a **family** of **monocarboxylate transporters** (MCTs), first cloned and sequenced in the hamster. We have recently cloned two MCT isoforms (MCT1 and MCT2) from a mouse kidney cDNA library. Northern blot analysis revealed that MCT1 mRNA is ubiquitous and can be detected in most tissues at a relatively constant level. MCT2 expression is more limited, with high levels of expression confined to testes, kidney, stomach, and liver and lower levels in lung, brain, and epididymal fat. Both MCT1 mRNA and MCT2 mRNA are detected in mouse brain using antisense riboprobes and in situ hybridization. MCT1 mRNA is found throughout the cortex, with higher levels of hybridization in hippocampus and cerebellum. MCT2 mRNA was detected in the same areas, but the pattern of expression was more specific. In addition, MCT1 mRNA, but not MCT2, is localized to the choroid plexus, ependyma, microvessels, and white matter structures such as the corpus callosum. These results suggest a differential expression of the two MCTs at the cellular level.

L10 ANSWER 11 OF 19 MEDLINE on STN
ACCESSION NUMBER: 1998087501 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9425115
TITLE: Cloning and sequencing of four new mammalian **monocarboxylate transporter** (MCT) homologues confirms the existence of a transporter **family** with an ancient past.
AUTHOR: Price N T; Jackson V N; Halestrap A P
CORPORATE SOURCE: Department of Biochemistry, School of Medical Sciences, University of Bristol, Bristol BS8 1TD, U.K.
SOURCE: Biochemical journal, (1998 Jan 15) 329 (Pt 2) 321-8. Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-U59299; GENBANK-U79745; GENBANK-U81800
ENTRY MONTH: 199802
ENTRY DATE: Entered STN: 19980306
Last Updated on STN: 20000303
Entered Medline: 19980220

AB Measurement of monocarboxylate transport kinetics in a range of cell types has provided strong circumstantial evidence for a **family** of **monocarboxylate transporters** (MCTs). Two mammalian MCT isoforms (MCT1 and MCT2) and a chicken isoform (REMP or MCT3) have already been cloned, sequenced and expressed, and another MCT-like sequence (XPCT) has been identified. Here we report the identification of new human MCT homologues in the database of expression sequence tags and the cloning and sequencing of four new full-length MCT-like sequences from human cDNA libraries, which we have denoted MCT3, MCT4, MCT5 and MCT6. Northern blotting revealed a unique tissue distribution for the expression of mRNA for each of the seven putative MCT isoforms (MCT1-MCT6 and XPCT). All sequences were predicted to have 12 transmembrane (TM) helical domains with a large intracellular loop between TM6 and TM7. Multiple sequence alignments showed identities ranging from 20% to 55%, with the greatest conservation in the predicted TM regions and more variation in the C-terminal than the N-terminal region. Searching of additional sequence databases identified candidate MCT homologues from the yeast Saccharomyces cerevisiae, the nematode worm Caenorhabditis elegans and the archaebacterium Sulfolobus solfataricus. Together these sequences constitute a new family of transporters with some strongly conserved sequence motifs, the possible **functions** of which are discussed.

L10 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:20274 CAPLUS
DOCUMENT NUMBER: 136:397373
TITLE: Advances in study of the **monocarboxylate transporter** (MCT) gene **family**
AUTHOR(S): Zhang, Guizhi; Huang, Guijun; Guo, Xianjian
CORPORATE SOURCE: Institute of Respiratory Disease, Xinqiao Hospital, Third Military Medical University, Chungking, 400037, Peop. Rep. China
SOURCE: Shengwu Huaxue Yu Shengwu Wuli Jinzhan (2001), 28(2), 172-174
CODEN: SHYCD4; ISSN: 1000-3282
PUBLISHER: Shengwu Huaxue Yu Shengwu Wuli Jinzhan Bianjibu
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese
AB A review with 18 refs. on the **monocarboxylate transporter** gene **family** including structure, **function**, tissue distribution, and regulation of MCT gene **family** expression.

L10 ANSWER 13 OF 19 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
ACCESSION NUMBER: 2003:154598 BIOSIS
DOCUMENT NUMBER: PREV200300154598
TITLE: Expression and Polarity of Monocarboxylate Transporters in Human Retinal Pigment Epithelium.
AUTHOR(S): Philp, N. J. [Reprint Author]; Yoon, H. [Reprint Author]; Wang, D. [Reprint Author]
CORPORATE SOURCE: Pathology, Anatomy and Cell Biology, Thomas Jefferson University, Philadelphia, PA, USA
SOURCE: ARVO Annual Meeting Abstract Search and Program Planner, (2002) Vol. 2002, pp. Abstract No. 2428. cd-rom.
Meeting Info.: Annual Meeting of the Association For Research in Vision and Ophthalmology. Fort Lauderdale, Florida, USA. May 05-10, 2002.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Mar 2003
Last Updated on STN: 26 Mar 2003
AB Purpose: To identify the monocarboxylate transporters (MCTs)expressed in human retinal pigment epithelium (RPE) in situ and in ARPE-19 cells. Methods: MCT expression in human RPE and ARPE-19 cells was determined using reverse transcription-polymerase chain reaction (RT-PCR) with isoform specific primers. Immunohistochemical localization of MCTs in human donor eyes and ARPE-19 cells was performed using isoform specific peptide antibodies. Specificity of antibodies was determined by Western blot analysis. Results: MCT1 and MCT3 were amplified by RT-PCR from RPE-choroid complex and differentiated ARPE-19 cells. While most cells express MCT1, we previously showed in mouse that MCT3 is preferentially expressed by the RPE. Immunofluorescence microscopy of adult human donor eye revealed a polarized distribution of MCTs in the RPE. MCT1 antibody labeled the apical membrane of the RPE while labeling with MCT3 antibodies was restricted to the basolateral surface. Similarly, immuno-labeling of sections through differentiated ARPE-19 cell cultures showed that MCT1 was polarized to the apical membrane. There was no detectable MCT3 labeling in ARPE-19 cells even though the transcript was expressed. ARPE-19 cells expressed MCT4, a MCT isoform closely related to MCT3. Immunohistochemical labeling of ARPE-19 cells with antibodies specific for MCT4 demonstrated selective labeling of the basolateral membrane. While the RPE cells express two MCT isoforms, only one glucose transporter is expressed, GLUT1. GLUT1 antibody labeled the apical and basolateral

membranes of human RPE and ARPE-19 cells. Conclusion: **Monocarboxylate transporters** (MCTs) are a **family** of highly homologous membrane proteins that mediate the 1:1 transport of a proton and a lactate ion. Lactate is both an end product and a substrate of energy metabolism in the retina. The expression two distinct MCT isoforms in RPE is consistent with a role for the RPE in regulating lactate levels in the outer retina. The coordinated **activities** of MCT1 in the apical membrane and MCT3 in the basolateral membrane could control transepithelial movement of lactate.

L10 ANSWER 14 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2004:10980 SCISEARCH
THE GENUINE ARTICLE: 753UY
TITLE: The loop between helix 4 and helix 5 in the monocarboxylate transporter MCT1 is important for substrate selection and protein stability
AUTHOR: Galic S; Schneider H P; Broer A; Deitmer J W; Broer S (Reprint)
CORPORATE SOURCE: Australian Natl Univ, Sch Biochem & Mol Biol, Canberra, ACT 0200, Australia (Reprint); Univ Kaiserslautern, FB Biol, Abt Allgemeine Zool, D-67653 Kaiserslautern, Germany
COUNTRY OF AUTHOR: Australia; Germany
SOURCE: BIOCHEMICAL JOURNAL, (1 DEC 2003) Vol. 376, Part 2, pp. 413-422.
Publisher: PORTLAND PRESS, 59 PORTLAND PLACE, LONDON W1N 3AJ, ENGLAND.
ISSN: 0264-6021.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 23

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Transport of lactate, pyruvate and the ketone bodies acetoacetate and beta-hydroxybutyrate, is mediated in most mammalian cells by members of the **monocarboxylate transporter family** (SLC16). A conserved signature sequence has been identified in this **family**, which is located in the loop between helix 4 and helix 5 and extends into helix 5. We have mutated residues in this signature sequence in the rat **monocarboxylate transporter** (MCTI) to elucidate the significance of this region for monocarboxylate transport. Mutation of R143 and G153 resulted in complete inactivation of the transporter. For the MCT1(G153V) mutant this was explained by a failure to reach the plasma membrane. The lack of transport **activity** of MCT1(R143Q) could be partially rescued by the conservative exchange R143H. The resulting mutant transporter displayed reduced stability, a decreased V-max of lactate transport but not of acetate transport, and an increased stereoselectivity. Mutation of K137, K141 and K142 indicated that only K142 played a significant role in the transport mechanism. Mutation of K142 to glutamine resulted in an increase of the Km for lactate from 5 mM to 12 mM. In contrast with MCTI(R143H), MCT1(K142Q) was less stereoselective than the wild-type. A mechanism is proposed that includes all critical residues.

L10 ANSWER 15 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2002:269665 SCISEARCH
THE GENUINE ARTICLE: 534ME
TITLE: Aluminum citrate uptake by immortalized brain endothelial cells: implications for its blood-brain barrier transport
AUTHOR: Yokel R A (Reprint); Wilson M; Harris W R; Halestrap A P
CORPORATE SOURCE: Univ Kentucky, Med Ctr, Coll Pharm, 501B Pharm Bldg Rose St, Lexington, KY 40536 USA (Reprint); Univ Kentucky, Med Ctr, Coll Pharm, Lexington, KY 40536 USA; Univ Kentucky,

Med Ctr, Grad Ctr Toxicol, Lexington, KY 40536 USA; Univ Bristol, Sch Med Sci, Dept Biochem, Bristol BS8 1TD, Avon, England; Univ Missouri, Dept Chem, St Louis, MO 63121 USA
COUNTRY OF AUTHOR: USA; England
SOURCE: BRAIN RESEARCH, (15 MAR 2002) Vol. 930, No. 1-2, pp. 101-110.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0006-8993.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 49

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The objective was to further test the hypothesis that aluminum (Al) citrate transport across the blood-brain barrier is mediated by a **monocarboxylate transporter** (MCT). Speciation calculations showed that Al citrates were the predominant Al species under the conditions employed. Al citrate did not inhibit lactate uptake and was not taken up by the rat erythrocyte, suggesting it does not serve as an effective substrate for either MCT1 or the anion exchanger. Studies were conducted with b.End5 cells derived from mouse brain endothelial cells to identify the properties of the carrier(s) mediating Al citrate transport. Western blot analysis of b.End5 cells showed expression of the transferrin receptor and MCT1, but not MCT2 or MCT4. Uptake of Al citrate was similar to70% faster than citrate. Citrate and Al citrate uptake were sodium independent. Citrate uptake increased at pH 6.9 compared to 7.4, whereas Al citrate uptake did not. Al citrate uptake was reduced by inhibitors of mitochondrial respiration and oxidative phosphorylation, suggesting ATP dependence, but not by ouabain, suggesting no role for Na/K-ATPase. Uptake was not affected by alpha-ketoglutarate or malonate, substrates for the dicarboxylate carrier. Many substrates and inhibitors of MCT1 and organic anion transporters reduced Al citrate uptake into b.End5 cells. BSP and fluorescein, organic anion transporter substrates /inhibitors, inhibited Al citrate uptake. We conclude that Al citrate transport across the blood-brain barrier is carrier-mediated, involving either an uncharacterized MCT isoform. expressed in the brain such as MCT7 or MCT8 and/or one of the many members of the organic anion transporting protein **family**, some of which are known to be expressed at the blood-brain barrier. (C) 2002 Elsevier Science B.V. All rights reserved.

L10 ANSWER 16 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2001:796337 SCISEARCH
THE GENUINE ARTICLE: 475JP
TITLE: The putative monocarboxylate permeases of the yeast Saccharomyces cerevisiae do not transport monocarboxylic acids across the plasma membrane
AUTHOR: Makuc J; Paiva S; Schauen M; Kramer R; Andre B; Casal M; Leao C; Boles E (Reprint)
CORPORATE SOURCE: Univ Dusseldorf, Inst Mikrobiol, Univ Str 1, D-40225 Dusseldorf, Germany (Reprint); Univ Dusseldorf, Inst Mikrobiol, D-40225 Dusseldorf, Germany; Univ Minho, Dept Biol, Ctr Ciencias Ambiente, P-4719 Braga, Portugal; Univ Cologne, Inst Biochem, D-50674 Cologne, Germany; Free Univ Brussels, Lab Physiol Cellulaire CP300, IBMM, B-6041 Gosselies, Belgium
COUNTRY OF AUTHOR: Germany; Portugal; Belgium
SOURCE: YEAST, (15 SEP 2001) Vol. 18, No. 12, pp. 1131-1143.
Publisher: JOHN WILEY & SONS LTD, BAFFINS LANE CHICHESTER, W SUSSEX PO19 1UD, ENGLAND.
ISSN: 0749-503X.
DOCUMENT TYPE: Article; Journal

LANGUAGE: English
REFERENCE COUNT: 34
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have characterized the monocarboxylate permease **family** of Saccharomyces cerevisiae comprising five proteins. We could not find any evidence that the **monocarboxylate transporter** -homologous (Mch) proteins of S. cerevisiae are involved in the uptake or secretion of monocarboxylates such as lactate, pyruvate or acetate across the plasma membrane. A yeast mutant strain deleted for all five MCH genes exhibited no growth defects on monocarboxylic acids as the sole carbon and energy sources. Moreover, the uptake and secretion rates of monocarboxylic acids were indistinguishable from the wildtype strain. Additional deletion of the JEN1 lactate transporter gene completely blocked uptake of lactate and pyruvate. However, uptake of acetate was not even affected after the additional deletion of the gene YHL008c, which had been proposed to code for an acetate transporter. The mch1-5 mutant strain showed strongly reduced biomass yields in aerobic glucose-limited chemostat cultures, pointing to the involvement of Mch transporters in mitochondrial metabolism. Indeed, intracellular localization studies indicated that at least some of the Mch proteins reside in intracellular membranes. However, pyruvate uptake into isolated mitochondria was not affected in the mch1-5 mutant strain. It is concluded that the yeast **monocarboxylate transporter**-homologous proteins perform other **functions** than do their mammalian counterparts. Copyright (C) 2001 John Wiley & Sons, Ltd.

L10 ANSWER 17 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2000:374572 SCISEARCH
THE GENUINE ARTICLE: 313LL
TITLE: An endogenous monocarboxylate transport in Xenopus laevis oocytes
AUTHOR: Tosco M (Reprint); Orsenigo M N; Gastaldi G; Faelli A
CORPORATE SOURCE: UNIV MILAN, DIPARTIMENTO FISIOL & BIOCHIM GEN, VIA CELORIA 26, I-20133 MILAN, ITALY (Reprint); UNIV PAVIA, IST FISIOL UMANA, I-27100 PAVIA, ITALY
COUNTRY OF AUTHOR: ITALY
SOURCE: AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY, (MAY 2000) Vol. 278, No. 5, pp. R1190-R1195.
Publisher: AMER PHYSIOLOGICAL SOC, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814.
ISSN: 0363-6119.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 37
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We investigated the existence of an endogenous system for lactate transport in Xenopus laevis oocytes. Cl-36-uptake studies excluded the involvement of a DIDS-sensitive anion antiporter as a possible pathway for lactate movement. L-[C-14]lactate uptake was unaffected by superimposed pH gradients, stimulated by the presence of Na+ in the incubating solution, and severely reduced by the **monocarboxylate transporter** inhibitor p-chloromercuribenzenesulphonate (pCMBS). Transport exhibited a broad cation specificity and was cis inhibited by other monocarboxylates, mostly by pyruvate. These results suggest that lactate uptake is mediated mainly by a transporter and that the preferred anion is pyruvate. [C-14]pyruvate uptake exhibited the same pattern of **functional** properties evidenced for L-lactate. Kinetic parameters were calculated for both monocarboxylates, and a higher affinity for pyruvate was revealed. Various inhibitors of **monocarboxylate transporters**

reduced significantly pyruvate uptake. These studies demonstrate that Xenopus laevis oocytes possess a monocarboxylate transport system that shares some **functional** features with the members of the mammalian monocarboxylate cotransporters **family**, but, in the meanwhile, exhibits some particular properties, mainly concerning cation specificity.

L10 ANSWER 18 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1999:529563 SCISEARCH
THE GENUINE ARTICLE: 212HH
TITLE: Lactate transport in skeletal muscle - role and regulation of the monocarboxylate transporter
AUTHOR: Juel C; Halestrap A P (Reprint)
CORPORATE SOURCE: UNIV BRISTOL, SCH MED SCI, DEPT BIOCHEM, BRISTOL BS8 1TD, AVON, ENGLAND (Reprint); UNIV BRISTOL, SCH MED SCI, DEPT BIOCHEM, BRISTOL BS8 1TD, AVON, ENGLAND; UNIV COPENHAGEN, AUGUST KROGH INST, COPENHAGEN MUSCLE RES CTR, DK-2100 COPENHAGEN, DENMARK
COUNTRY OF AUTHOR: ENGLAND; DENMARK
SOURCE: JOURNAL OF PHYSIOLOGY-LONDON, (15 JUN 1999) Vol. 517, No. 3, pp. 633-642.
Publisher: CAMBRIDGE UNIV PRESS, 40 WEST 20TH STREET, NEW YORK, NY 10011-4211.
ISSN: 0022-3751.
DOCUMENT TYPE: General Review; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 65

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Skeletal muscle is the major producer of lactic acid in the body, but its oxidative fibres also use lactic acid as a respiratory fuel. The stereoselective transport of L-lactic acid across the plasma membrane of muscle fibres has been shown to involve a proton-linked **monocarboxylate transporter** (MCT) similar to that described in erythrocytes and other cells. This transporter plays an important role in the pH regulation of skeletal muscle. A **family** of eight MCTs has now been cloned and sequenced, and the tissue distribution of each isoform varies. Skeletal muscle contains both MCT1 (the only isoform found in erythrocytes but also present in most other cells) and MCT4. The latter is found in all fibre types, although least in more oxidative red muscles such as soleus, whereas expression of MCT1 is highest in the more oxidative muscles and very low in white muscles that are almost entirely glycolytic. The properties of MCT1 and MCT2 have been described in some detail and the latter shown to have a higher affinity for substrates. MCT4 has been less well characterized but has a lower affinity for L-lactate (i.e. a higher K-m, of 20 mM) than does MCT1 (K-m of 5 mM). MCT1 expression is increased in response to chronic stimulation and either endurance or explosive exercise training in rats and humans, whereas denervation decreases expression of both MCT1 and MCT4. The mechanism of regulation is not established, but does not appear to be accompanied by changes in mRNA concentrations. However, in other cells MCT1 and MCT4 are intimately associated with an ancillary protein OX-47 (also known as CD147). This protein is a member of the immunoglobulin **superfamily** with a single transmembrane helix, whose expression is known to be increased in a range of cells when their metabolic **activity** is increased.

L10 ANSWER 19 OF 19 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1998:695293 SCISEARCH
THE GENUINE ARTICLE: 116VX
TITLE: Monocarboxylate transporter expression in mouse brain

AUTHOR: KoehlerStec E M (Reprint); Simpson I A; Vannucci S J; Landschulz K T; Landschulz W H
CORPORATE SOURCE: NIDDKD, EXPT DIABET METAB & NUTR SECT, DIABET BRANCH, NIH, BLDG 10, RM 5N102, 10 CTR DR, MSC 1420, BETHESDA, MD 20892 (Reprint); PENN STATE UNIV, MILTON S HERSHEY MED CTR, HERSHEY, PA 17033; UNIV TEXAS, SW MED CTR, DALLAS, TX 75235
COUNTRY OF AUTHOR: USA
SOURCE: AMERICAN JOURNAL OF PHYSIOLOGY-ENDOCRINOLOGY AND METABOLISM, (SEP 1998) Vol. 38, No. 3, pp. E516-E524. Publisher: AMER PHYSIOLOGICAL SOC, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814.
ISSN: 0193-1849.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 37

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Although glucose is the major metabolic fuel needed for normal brain **function**, monocarboxylic acids, i.e., lactate, pyruvate, and ketone bodies, can also be utilized by the brain as alternative energy substrates. In most mammalian cells, these substrates are transported either into or out of the cell by a **family** of **monocarboxylate transporters** (MCTs), first cloned and sequenced in the hamster. We have recently cloned two MCT isoforms (MCT1 and MCT2) from a mouse kidney cDNA library. Northern blot analysis revealed that MCT1 mRNA is ubiquitous and can be detected in most tissues at a relatively constant level. MCT2 expression is more limited, with high levels of expression confined to testes, kidney, stomach, and liver and lower levels in lung, brain, and epididymal fat. Both MCT1 mRNA and MCT2 mRNA are detected in mouse brain using antisense riboprobes and in situ hybridization. MCT1 mRNA is found throughout the cortex, with higher levels of hybridization in hippocampus and cerebellum. MCT2 mRNA was detected in the same areas, but the pattern of expression was more specific. In addition, MCT1 mRNA, but not MCT2, is localized to the choroid plexus, ependyma, microvessels, and white matter structures such as the corpus callosum. These results suggest a differential expression of the two MCTs at the cellular level.

=> d his

(FILE 'HOME' ENTERED AT 14:04:47 ON 04 MAR 2004)

FILE 'MEDLINE, CAPLUS, BIOSIS, SCISEARCH' ENTERED AT 14:07:00 ON 04 MAR 2004

L1 997 S MONOCARBOXYLATE(W)TRANSPORTER?
L2 8 S SLC16
L3 5 DUP REM L2 (3 DUPLICATES REMOVED)
L4 113 S L1(S)(FAMILY OR SUPERFAMILY)
L5 40 DUP REM L4 (73 DUPLICATES REMOVED)
L6 214 S MCT4 OR MCT!4
L7 190 S L6 AND L1
L8 67 DUP REM L7 (123 DUPLICATES REMOVED)
L9 10 S L5 AND L8
L10 19 S L5 AND (FUNCTION? OR ACTIVIT?)

=>

---Logging off of STN---

=>
Executing the logoff script...

=> LOG Y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	77.22	78.06

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-2.08	-2.08

STN INTERNATIONAL LOGOFF AT 14:11:38 ON 04 MAR 2004